TELEPHONE ENGINEER & MANAGEMENT

the telephone industry magazine

MAY 15, 1961
Price 50c

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TELEPHONE ENGINEER & MANAGEMENT

Published on the 1st and 15th of each month by

TELEPHONE ENGINEER PUBLISHING CORP.
7720 Sheridan Road, Chicago 26, Ill.

Telephone
ROgers Park 4-3040
Chicago

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Member of
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Average Total Qualified Circulation
For 12-Month Period Ending June 1960,
13,817

TELEPHONE ENGINEER & MANAGEMENT

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VOL. 65 NO. 10 MAY, 15, 1961

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THE TE&M FRONT COVER

THE FIRST telephone circuits of the Ballistic Missile Early Warning System (BMEWS) Communications network have been made available for U. S. Air Force use between the missile detection station at Clear, Alaska and Fairbanks, the Western Electric Co. announced late in February. The TD–2 microwave communications tower (see front cover) stands like a lonely sentinel near Clear, Alaska. Over its antennas signals are received, amplified and transmitted onwards in the BMEWS Rearward Communications System. This type of station is a vital part of the rearward communications in BMEWS. (For complete story see "Keeping Up With Communications," page 20.)

Volume 65, No. 10. Published on the 1st and 15th of each month by TELEPHONE ENGINEER PUBLISHING CORP., 7720 Sheridan Rd., Chicago 26, Ill. Office of publication 600 S. 7th St., Rochelle, Ill. Subscriptions, U. S. and Possessions, $4.00 per year; Canada, $4.50; in all other countries, $6.50. Single Copies, U. S. A., 50 cents. Entered as Second Class matter at the post office at Rochelle, Ill. under the act of March 3, 1879. Copyright 1961 by Telephone Engineer Publishing Corp., 7720 N. Sheridan Rd., Chicago 26, Ill.
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AN
INTRODUCTION
TO THE
COMPACT...
VERSATILE...
MAINTAINABLE...
ACCURATE...

KELLOGG

AUTOMATIC TOLL TICKET

from ITT Kellogg you get the "basics"... plus...

Function for function, the ITT Kellogg Automatic Toll Ticketing System *meets and exceeds* all other ticketing systems available. It incorporates and combines the *best* features of *all* the very latest systems including provision for nation-wide dialing, P.P.C.S. service, among others.

in addition, the ITT Kellogg sytsem offers these distinct advantages:

it is

(1) *The most compact in size* . . . features advanced, new, smaller-size ticketers. Requires far less floor space than any other system now on the market . . . actually less than *half* the space of some!

(2) *Universally compatible* . . . becomes a "natural extension" of your present equipment – regardless of type . . . a universal register automatically adapts system to *any* method of calling party identification!

(3) *Simplified, assured trouble-free* . . . number and kinds of components reduced to a minimum. Features simplified circuits . . . utilizes only familiar switching principles, for easy, year 'round maintenance by your *own* people.

(4) *Accurate* . . . Better than 99.9% of output billable.

For complete details and technical information, or an appraisal of your Automatic Toll Ticketing requirements, see your local ITT Kellogg Representative or call or write the ITT Kellogg Regional Office nearest you.

ING SYSTEM

ITT **KELLOGG**

A Division of
International Telephone & Telegraph Corporation
6650 South Cicero Avenue, Chicago 38, Illinois

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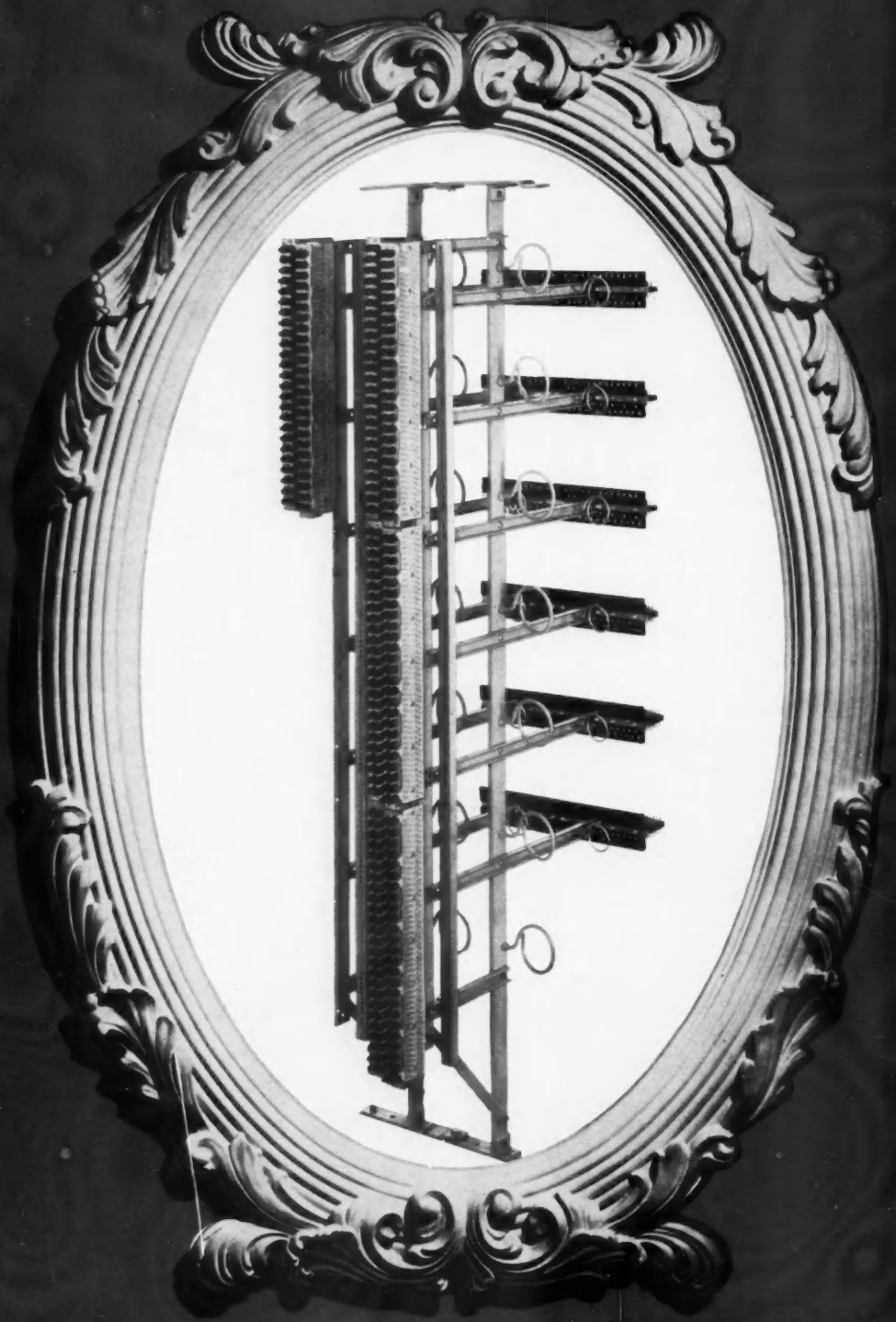
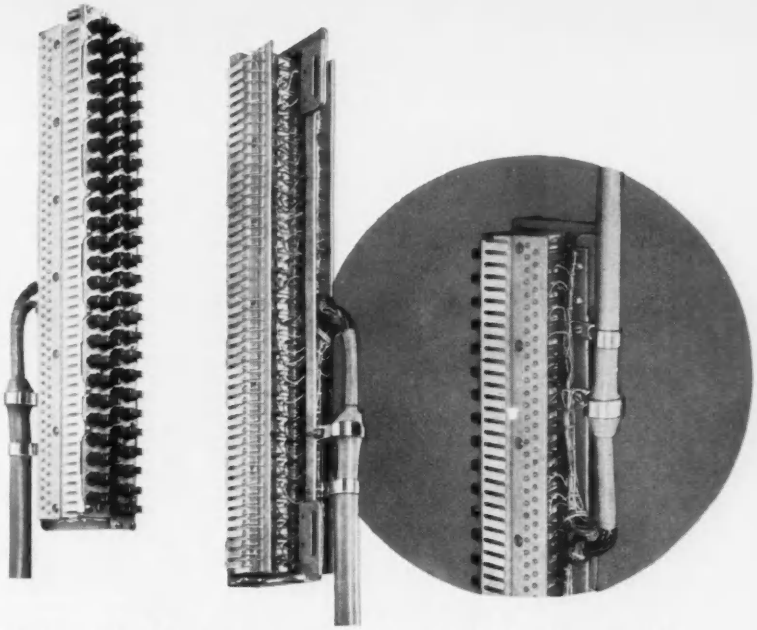
ITT Kellogg products available in Canada
through Standard Telephones & Cables Mfg. Co. Ltd.
9600 St. Lawrence Boulevard, Montreal 12, P.Q., Canada



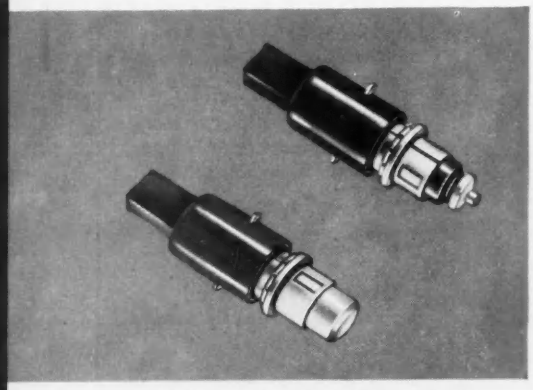
A *Reliable* image of improved main frames

The R300 Connector has a cast resin body, metal faceplate and twistlock inserted protector units. Circuits may be opened without removing the protector units.



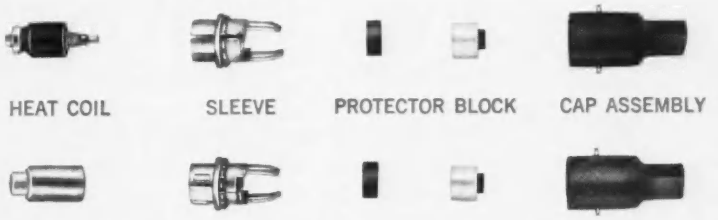
Stub cable is wire wrapped to projecting terminals at the back of the connector and is secured to an aluminum reinforced bar. All R300 Connectors are supplied with mounting brackets suitable for attaching to Main Frame protector bars.

Stub cable is 22 or 24 gauge PVC insulated, available in 101 or 51 pair; it is light, flexible and easy to handle.



Protector elements and contacts are completely enclosed in a dust-free high grade plastic assembly.

Catalog No. 3004 protector unit has a standard central office type heat coil and a .004 carbon-to-carbon air gap protector.



Catalog No. 3000 protector unit has a metallic dummy heat coil for use where heat coil protection is not required.

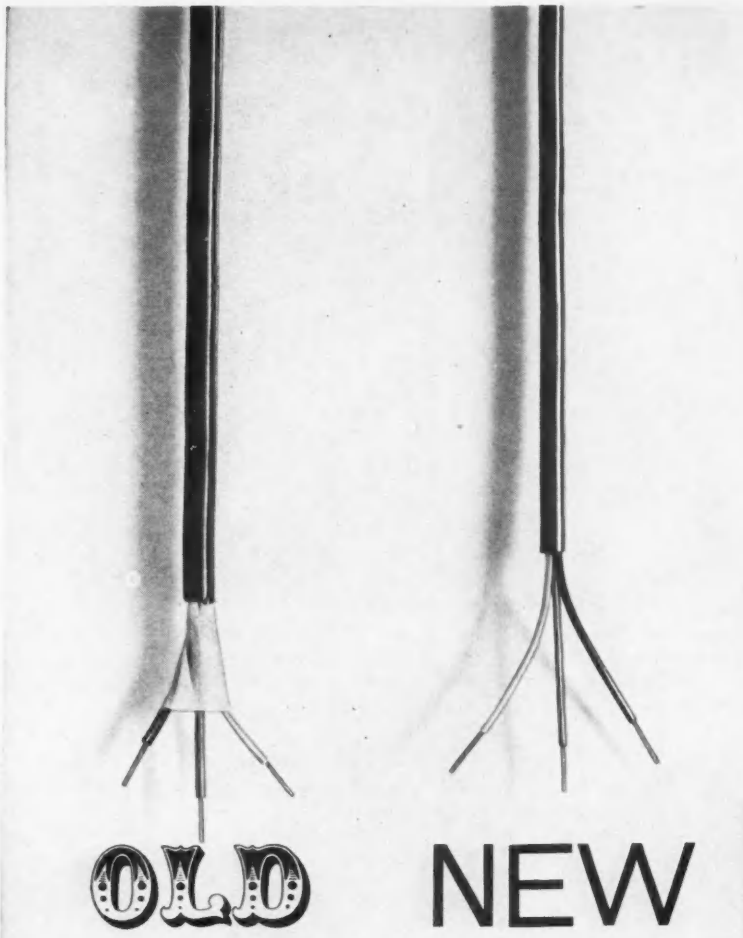
Reliable Type R300 Connectors and Main Frames are designed for installation in new or existing central office main frame rooms as well as P.B.X., P.A.B.X. and sub-exchanges. Connectors may be ordered in 50 or 100 pair banks with or without cable stub.

Light and compact, the 100 pair connector can be installed by one man in just a few minutes. Unpacking the R300 Connector is also a one-man operation; it is easily removed from a light, strong corrugated carton without the use of tools.

Write for detailed information in Reliable's Product Data Sheet No. 32.

Reliable ELECTRIC COMPANY • Franklin Park, Illinois

A Symbol of Integrity Since 1909



LIGHTWEIGHT• SMALL DIAMETER INSIDE/OUTSIDE STATION WIRE WITH HIGH-DENSITY POLYETHYLENE INSULATION

Here's what you get with new improved Inside/Outside Station Wire:

- smaller, neater looking wire
- faster installations: wire trains easily due to reduced size, installs with staple gun
- improved electrical and physical properties
- twisted conductors to prevent cross-talk on multiple long runs
- high density polyethylene color-coded insulation with weather resisting vinyl jacket for easy stripping
- lower cost

Another example of how Alphaduct makes available to you the best in new product developments. Insist on Alphaduct Inside/Outside station wires, the newest and finest . . . available either twisted or paired.

National Distributors: Automatic Electric Sales Corporation, Northlake, Illinois; Leich Sales Corporation. 427 W. Randolph Street, Chicago, Illinois.

ALPHADUCT WIRE AND CABLE CO. NEW BRUNSWICK, N. J.

Regional Distributors: Buckeye Telephone & Supply Co., Columbus Ohio; The Lindsay Telephone Supply Co., Cleveland. Ohio; Pankey Supply Co., Charlottesville Va.

coming CONVENTIONS

ILLINOIS Tel. Assoc., Pere Marquette Hotel, Peoria Ill., May 17-19.

KANSAS-MISSOURI Tel. Association, Continental Hotel, Kansas City, Mo., May 22-23.

PENNSYLVANIA Tel. Assoc., Pocono Manor Inn., Pocono Manor, Pa., June 5-7.

NATIONAL Safety Council's Public Utilities Section, Executive Committee, Laurentien Hotel, Montreal, Quebec, Canada, June 13-14.

WASHINGTON-OREGON Tel. Assoc., Empress Hotel, Victoria, B. C., June 15-16.

NEW YORK Tel. Assoc., Scaroon Manor, Schroon Lake, N. Y., June 19-21.

CALIFORNIA Tel. Assoc., Hawaiian Village, Honolulu, Hawaii, June 26-30.

ALASKA Tel. Assoc., Hotel Not Announced, Palmer, Alaska, Aug. 21-23.

ROCKY MT. Tel. Assoc., Owyhee Hotel, Boise, Sept. 13-15.

GEORGIA Tel. Assoc., Corsair Motel, Jekyll Island, Ga., Sept. 14-15.

MICHIGAN Tel. Assoc., Pantlind Hotel, Grand Rapids, Mich., Sept. 19-21.

NEVADA Tel. Assoc., Stockmens Hotel, Elko, Nevada, Sept. 19-21.

WEST VA. Tel. Assoc., Oglebay Park Hotel, Wheeling, W. Va., Sept. 26-27.

USITA CONVENTION, Conrad Hilton Hotel, Chicago, Ill., Oct. 8-11.

SOUTH CAROLINA Tel. Assoc., Clemson House, Clemson, S. C., Oct. 23-24.

FLORIDA Tel. Assoc., The Carillon Hotel, Miami Beach, Fla., Nov. 26-28.

MARLEX* conduit goes underground

Kansas Gas and Electric Co. finds non-corroding conduit of tough, lightweight MARLEX plastic promises longer, trouble-free service.

For their new underground primary distribution in growing Vickridge, a subdivision of Wichita, Kansas, KG&E approved 3-inch conduit made of MARLEX. The installation was made by Southwestern Electric Company. J. D. Green, chief engineer for Southwestern, says, "We installed some 6,000 feet of 3-inch MARLEX. Our comparative cost study shows MARLEX was installed at a 30% saving over the cost of asbestos cement conduit . . . 60% saving over galvanized steel. Naturally, we recommend the use of MARLEX conduit."

Large or small diameter, rigid or flexible—conduit made of MARLEX is lightweight and virtually indestructible. It is effortlessly handled without heavy equipment, economically shipped, and easily installed with butt-fusion joints, threaded or drive-on couplings. Ideal for underground installations of power and communication conduit . . . MARLEX resists acids, solvents, alkalies, bacteria, rot and corrosion . . . possesses excellent load-bearing strength, high dielectric, and a wide usable temperature range. Its smooth inner surface makes cable pulling easier and faster.

*MARLEX is a trademark for Phillips family of olefin polymers.

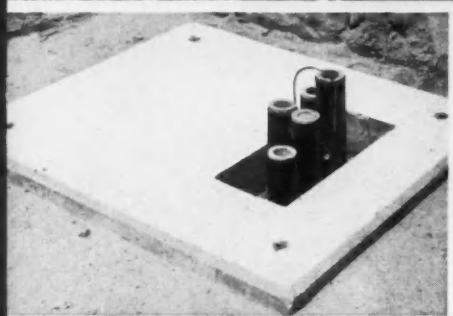


Photo shows conduit installed to transformer location . . . and (insert) finished concrete pad. System designed by W. W. Zook, Wichita, Kansas . . . Consulting Electrical Engineer to Vickridge Estates. Conduit: Triangle Conduit and Cable Co., Inc., New Brunswick, N. J.

For more information, see your electrical supplier . . . or contact us.

PHILLIPS CHEMICAL COMPANY
Bartlesville, Oklahoma
A subsidiary of Phillips Petroleum Company

PHILLIPS 66 MARLEX PLASTICS

open up

more revenue- producing locations **with this...**

It's a complete booth!

It's a solid booth!

It's a quality booth!

low cost

Model 15-S, Type 1

SHERRON STEEL BOOTH

You too can realize revenue from two booths where you could only afford one before. With this low cost Sherron steel booth, you can plan extension of your paystation program to include locations you may now be by-passing. Ideally suited to low income areas, this economy Sherron steel booth is all that a complete telephone booth should be. Full size, full quality, and affording full protection. It's a rugged, rigid booth with two sideglass, see-thru panels. Built of zinc-coated steel, its Flame Red color of lustrous, baked-on DuPont enamel will stay new looking for years. Factory assembled and ready for service on delivery. Fireproof...and REA approved. Order through your distributor.

There's a Sherron booth for every location and budget in either zinc coated or stainless steel

SHERRON METALLIC CORP., 1201 FLUSHING AVE., BROOKLYN 37, N.Y.

NEWSLETTER
TELEPHONE INDUSTRY

Prepared By The Editorial Staff of TELEPHONE ENGINEER and MANAGEMENT

ON THE 1st OF EACH MONTH ★ ON THE 15th OF EACH MONTH

Dear Sir: May 15, 1961

TIME TO ENROLL FOR USITA MANAGEMENT DEVELOPMENT PROGRAM . . . USITA reports that although reservations for the USITA-sponsored Management Development Program to be held at University of Kansas, Lawrence, Kans., on July 16 to August 11 are coming in fast, a few openings are still available. USITA suggests that if your company is interested in obtaining an enrollment at this school, you send in your application at earliest moment to insure that it will not arrive too late. The quota is limited. If by any chance you have not yet received brochure describing Program in detail you can obtain one by writing to Dr. James R. Surface, Director, USITA Management Development Program, c/o The University of Kansas, School of Business, Lawrence, Kansas.

Persons who have attended previous Management Development schools are unanimous in expressing enthusiastic approval of what it offers Independent telephone people. Several companies have given testimony to fact that their management people who have attended have returned much better prepared to meet the increasing challenges of the communications business. Those management heads who have sent one or more of their prospective executives to the Management Development school did so because they recognized the importance of taking time out to assist in qualifying their key people for the difficult problems of the future.

The same can be said of the two other USITA-sponsored seminars, namely, the executive workshop in Telephone Marketing to be held at Kellogg Center, at Michigan State University, East Lansing, July 16-21; and the Engineering Conference also be be conducted at Kellogg Center, Michigan State, on June 25 to July 15.

GOLDBERG ESTABLISHES OFFICE OF AUTOMATION IN DEPARTMENT OF LABOR . . . An Office of Automation & Manpower within the Department of Labor was established April 20, by an order of Secretary of Labor Arthur J. Goldberg, who first disclosed his intentions to take such a step on April 19, in an address to the Economic Club of New York in New York City.

The new office, Mr. Goldberg said, "has been directed to examine employment and unemployment in industry, occupation and area, to follow current and anticipated technological changes. It will consider and develop educational and guidance programs to allow workers who may be displaced by automation to find new employment, without suffering a long period of unemployment. It will develop proposals for both training and retraining, for both placement and replacement of workers coming into the new economy, and those who must change their places within it."

President Joseph A. Beirne, of the Communications Workers of America, was one of the earliest and strongest advocates of the establishment of a Bureau of Automation in the Labor Department. Over the past several years, in numerous addresses, Mr. Beirne has urged the government to initiate a study of the problem.

USITA OPPOSES GSA MOVE TO COMPEL SAGE TARIFF FILINGS . . . United States Independent Telephone Association on April 20 filed with Federal Communications Commission a brief in opposition to petition of General Services Administration asking Commission for declaratory ruling that all communications equipment & services

ALCOA BOOTHS BOOST REVENUE BY 15 PER CENT!

In Hickory, North Carolina, Central Telephone Company reports:

"More than half our outdoor booths are Alcoa Aluminum outdoor booths," says Mr. W. R. McGrew, division manager for Central Telephone Company, Hickory, N. C. "And some of them have been in use for more than four years. We estimate a *10 to 15 per cent increase in revenue* from Alcoa booths over others!

"Maintenance-free, easy to keep clean and neat, well lighted, Alcoa booths seem to actually *attract* customers. Doors don't stick . . . glass breakage is less . . . and we don't have to constantly repaint aluminum booths," Mr. McGrew avers.

Solidly built with Alcoa® Aluminum Extrusions, these booths resist normal wear and tear—and vandalism as well! The Alumilite* finish stays bright and clean. Aluminum won't rust . . . resists corrosion. If space is no problem, look to large and sturdy Alcoa outdoor booths. For indoor (and sheltered exterior) installations, check on the new Alcoa "Compact" booth—only 28¾ in. square! Whichever booth you need, call your telephone supply jobber . . . or write: Aluminum Company of America, 1781-S Alcoa Building, Pittsburgh 19, Pa. World-wide sales through Alcoa International, Inc., 230 Park Avenue, New York 17, N. Y.

*Trade Name of Aluminum Company of America

ALCOA ALUMINUM

ALUMINUM COMPANY OF AMERICA

(Concluded from page 9)

furnished in connection with SAGE system are used in interstate or foreign telephone service & that American Tel. & Tel. Co. "and others" be required to to file tariffs for such "internal SAGE equipment." "And others," includes Independent telephone companies participating in furnishing facilities for SAGE network. GSA petition seeks to divest state commissions of all jurisdiction over SAGE communication & declare exclusive jurisdiction in the FCC.

USITA's petition cited "Independent, or non-Bell System, segment of the telephone industry which USITA represents has a real and vital interest in the matters and issues raised by the GSA petition, and wishes to be heard with respect thereto." AT&T previously had filed statement in opposition to GSA's request.

The NARUC also has forwarded letter to FCC opposing GSA move. NARUC pointed out that FCC can determine it has exclusive jurisdiction only if it can be found that no "intrastate communications service" is involved. NARUC said it is apparent from GSA affidavit accompanying petition that some SAGE services are intrastate, particularly those which have no access outside the Direction Center.

STATE COMMISSION APPROVES INDIANA BELL METROPOLITAN SERVICE PLAN . . . Indiana Bell Tel. Co.'s plan for expanding and improving metropolitan telephone service in the Indianapolis area was approved April 19, by the state Public Service Commission.

The commission authorized direct local calling without long distance charges between the city and surrounding exchanges within a 24-mile radius of downtown, city grades of service throughout the Indianapolis exchange area, local calling between suburban exchanges up to 18 miles apart, introduction of direct distance dialing throughout the metropolitan area, and establishment of a new metropolitan rate classification appropriate to the enlarged calling area approximately 10% above existing Indianapolis rates.

The state agency denied the company's petition for changes this year in certain miscellaneous and extension rates coincident with the addition of two more suburban offices to the Indianapolis local calling area, and it ruled that all rate adjustments would be effective with the completion of the entire program in 1962. A 10-cent increase granted in monthly rates for four-party service was 30 cents less than that proposed by Indiana Bell.

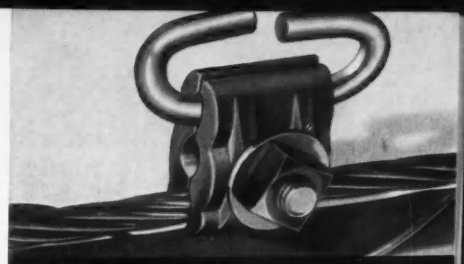
Indiana Bell President Roy C. Echols said "The services we are offering in this program are vital to central Indiana. We will go ahead with 'metroplan' and our target for completion is the summer or fall of 1962, even though the date established by the commission for some rate changes is much later than we had proposed."

The plan outlined by the company at hearings late last year and on April 10 involves 17 Indiana Bell exchanges, and it could embrace as many as 31 exchanges if all eligible connecting companies participate.

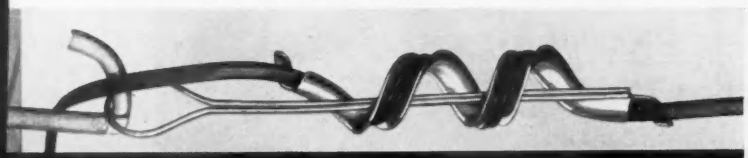
COMMISSION APPROVES PROPERTY TRANSFER BY NEW YORK TEL & ROCHESTER TEL. . . . Rochester (N. Y.) Tel. Corp. was given authority April 26, by the New York Public Service Commission to purchase from New York Tel. Co. certain equipment used in handling of intercompany toll calls for base price of about $810,000. Rochester company had asked approval of transaction as first step in program to acquire full responsibility for all aspects of telephone service within its franchised area. It hopes to complete such a transfer by July 1, 1966.

KEARNEY TELEPHONE ACCESSORIES

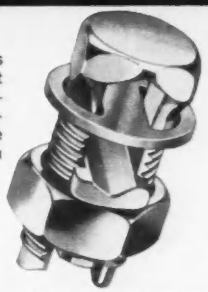
CONCEIVED IN THE FIELD... PROVED IN SERVICE



SPAN BRACKETS provide one or more service connections from knobs or hooks at points between poles. They fasten to the messenger and may be used on lashed or ring supported cables.



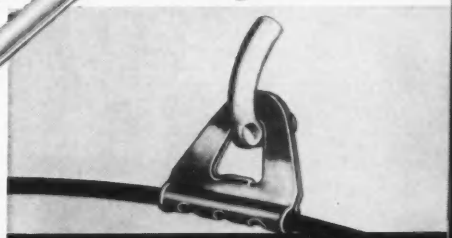
SNUB-R-GRIP DROP WIRE GRIP provides an efficient, free-swinging tie for drop wire attachments to poles and buildings. Snubbing action is greater than rated strength of the conductor because of spiral grip.



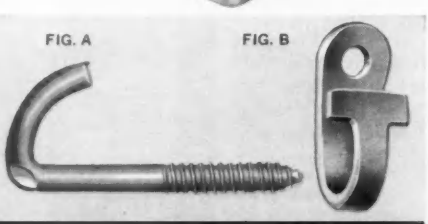
CON-NEC-TITE Solderless Connectors, for bridge or test connections. Assure low-resistance. Precision made for repeated use. Bodies are bronze or brass or plated for use with iron wire.

CLAMP-TITE GROUND CLAMP... will not loosen under vibration, expansion, contraction. One-piece copper construction has spring action for constant clamping force.

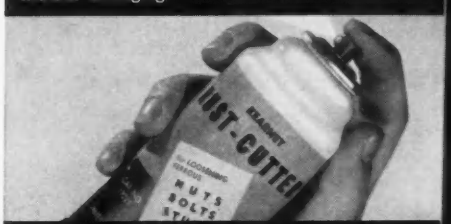
FULL-VUE GUY GUARDS in either All-Round or Half-Round style. High-strength aluminum alloy is easily visible at night. Weight is one third that of steel but is equal in strength making for easy installation. Guard clamps, will not turn on the strand.



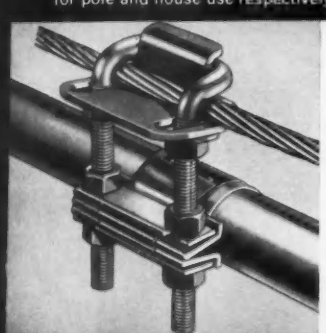
DROP WIRE CLIPS... stainless steel... for use with either parallel or twisted pair drop wire for intermediate fastenings on straight line drop extensions... are designed to grip tightly without damaging.



HOUSE AND POLE HOOKS: Fig. A is a standard house hook, ideal for hollow tile walls and similar construction. "B" is a drive hook which has wide application and is made in large and small sizes for pole and house use respectively.

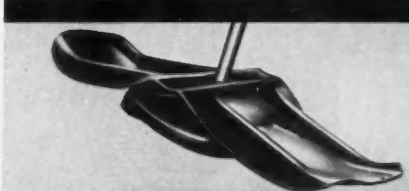


RUST-CUTTER loosens ferrous and other corroded hardware in seconds... atomized mist reaches otherwise inaccessible rust.



GRADE CLAMPS maintain proper spacing between cable and messenger, regardless of size of the cable ring used. Stainless steel band binds cable to clamp preventing injury to the sheath and permits complete reconditioning by inserting a new band.

AIRSEAL... seals out moisture, corrosion, oxidation... will not deteriorate underground... is not affected by temperature. Dielectric strength exceeds 280 volts per mil. Easily applied; just mold it with the hands... it bonds itself. It's easily removed and does not stick to hands or gloves.



2-WAY ANCHOR. The first truly efficient two-piece anchor... with holding power proved in over a million installations. They are installed quickly with just a few blows of the spreading tool... tend to position themselves solidly even in rocky soil.

for detailed ordering information contact your Kearney representative or write for Bulletin "T".

511

KEARNEY

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ANOTHER HOLAN FIRST

NEW LD-40 ELBOW

WITH HIGH DIELECTRIC STRENGTH, OFFSET YOKE *

One-step entry into the bucket at the rear of the truck is possible because of the offset yoke*.

*Patents applied for.

You save time right from the word "go" with the new Holan LD-40 Elbow. One step and you're in the easy-entry bucket. And one man controls every movement of the Elbow.

Ideal for re-fusing transformers, mid-span trouble work, installing customer service, insulator inspection, street light maintenance, telephone drop installations from mid-span — even maintenance of railroad catenary systems.

The exclusive offset yoke* not only facilitates bucket entry — *it increases versatility and working range.* Angle of the yoke — coupled with 90° lower arm, 135° upper arm travel — permits work over parked cars, over and between power and telephone lines, and on the property side of the pole. It reaches up 40', rotates 360° continuously in either direction.

It's safe, too. The molded fiberglass reinforced plastic bucket, yoke and upper arm can withstand a bucket-to-ground dielectric test in excess of 100,000 volts (A.C.).

Torsion bars and the reverse offset superstructure design eliminates stabilizing outriggers.

Want more details on this light-duty Elbow? Just call your Holan Field Representative . . . or write us.

HOLAN CORPORATION, 4100 W. 150th, CLEVELAND 35, OHIO

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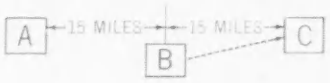
Subsidiary of THE OHIO BRASS COMPANY

HOLAN

WHY CAN'T ALL TOLL BE PROFITABLE?

Prior to the development of the nationwide DDD plan, there arose an immediate need for automatic toll handling equipment. Short haul ticketing became an economic necessity.



For example, we have towns A, B and C. Town B is located 15 miles East of Town A. Town C is located another 15 miles East of Town B. Here, a subscriber in Town B, calling a number in Town C, is making a 15 mile toll call with, let us say, a 20¢ toll charge.

But, Town B is not a toll center—Town A is. Therefore, the call goes from B to A, back to B, then on to C,

tieing up 45 miles of circuit for a 15 mile call! Furthermore, it may well cost the Telephone Company 35¢ or more to handle this call! No businessman can stay in business long selling for 20¢ what costs him 35¢!

However, ticketing equipment that would handle this call automatically, bringing the handling cost below the selling cost, enables him to show a profit.

To engineer equipment of this type means not only functional engineering, it means also cost conscious engineering. If the equipment cannot be installed at an economical cost and operated economically, it cannot prove itself out profitably.

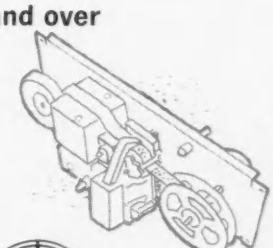
The first short haul ticketing equipment North built—and every piece of AuTollizer equipment since—was designed to fit the requirements of the Independent Operating Companies—budgetwise as well as functionally!

North Electric has, for over three quarters of a century, worked with and for the Independent Telephone Companies!

North AuTollizer® Equipment has always been built with the singleminded purpose of providing PROFITABLE equipment for the Operating Company.

That is why North AuTollizer equipment has proved itself over and over as the most efficient and most profitable automatic toll ticketing equipment available to the Independent Telephone Industry.

That is why progressive Independents continue to look to



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INDUSTRY OBSERVATIONS

By L. A. GRITTEN

The WATS Agreement

THE NEW U.S.I.T.A. — Bell System toll settlements agreement is one more item in the long record of small company indebtedness to the work of our national association. Our small company operators are fortunate. We doubt if there is another industry whose "big men" go to so much trouble and expense to keep the "small fry" profitably alive. We owe much to U.S.I.T.A. committees.

Enlightened self-interest? Perhaps — but whatever the reason, the facts are there and the obligation remains: Every one of our three thousand odd small companies should join and actively support their state associations and the United States Independent Telephone Association.

To Whom The Glory

THE emotional fuss over Major Gagarin is understandable. He is a brave man — if his superiors left him any choice in the matter. He was the first man in outer space; at all events, the first to return in good enough condition for Khruschev to boast about. But in fairness to those whose bold ventures made our own world and our own country, there are things we should remember.

A terrestrial explorer ordinarily made his own preparations and controlled his own fate enroute. The success of his plunge into the unknown depended upon what he was, what he planned and what he did. Men like Leif Ericson, Columbus, Drake, Magellan, Scott, Amundsen and Peary went as their own determination took them. If they returned successfully, they could thank their own resource and their own ability to deal with the vicissitudes of their adventures. Lindbergh crossed the Atlantic alone in his flimsy plane without benefit of microwave supervision and the scientific resources of a nation.

It may come to that in space; but thus far the "cosmonaut" has no such individuality. He is an item of ordered participation, under remote control, in a performance planned, arranged and pre-tested to the uttermost detail. Major Gagarin was merely one component of a missile that he controlled hardly at all. Three months before, Ham the chimpanzee had performed a similar feat; and before that a few pounds of electronic devices did about as well as either of them. The glory of these preliminary adventures in space lies with the superb preparation of the scientists and engineers. In that, we may proudly reflect, telecommunications men have played an essential part.

Mother Bell Marches On

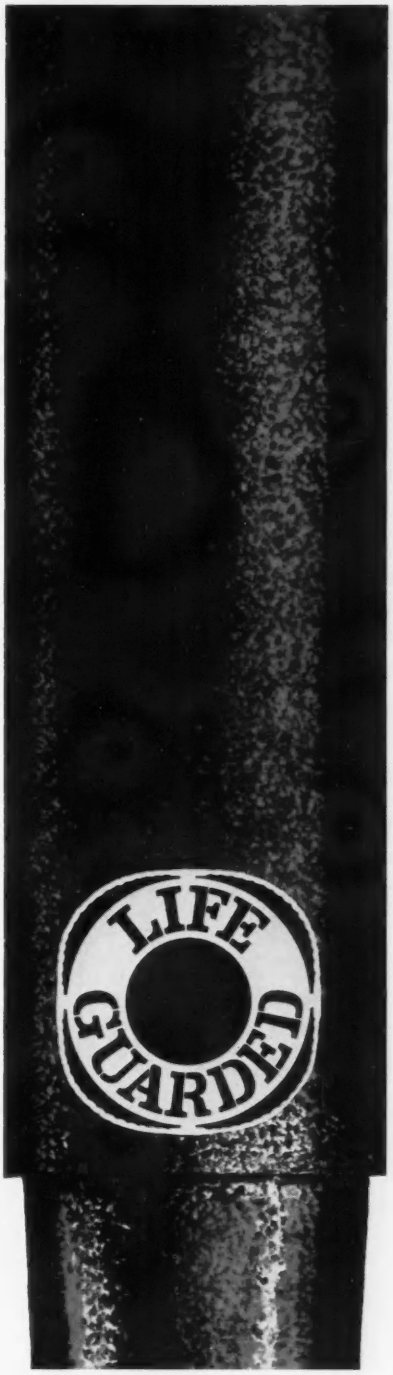
BEHOLD the American Telephone & Telegraph common stock, racing up, up, up to more and more. After many decades of unexciting but respectable dependability, $9 a share come war or peace, boom or depression, it has now blossomed out into a Wall Street combination of Prince Rupert and Flash Gordon, with the touch of Midas. There is a spate of enormous issues, bigger dividends, splits and rumors of splits, feature stories of Bell Laboratory triumphs, plans for space satellites, new and better services, every day a rash of bigger and better headlines.

Every telephone man, Bell or Independent, should be proud of it. It is the reflection of vigorous and capable management that is reaching out

BERMICO® electrical conduit is the *preferred* conduit for underground cable installations because it gives full protection against *all* elements. In every kind of installation — from suburban power lines to vital military communications links — Bermico's water and impact resistance . . . high dielectric strength . . . load-bearing capacity . . . make it the logical choice for the *positive protection* of vital power and communications lines.

"LIFE-GUARDED" Bermico conduit is made of tough cellulose fibres, vacuum impregnated with special bituminous pitch. Each section is uniformly round with smooth bore to permit easy pull-through of cables. Lightweight Bermico sections can be cut and tapered on the spot. It's self-sealing and perfectly suited for pneumatic rodding.

CONDUIT is available in a full range of diameters . . . in types for burial with or without concrete encasement or for limited burial . . . with all necessary fittings of the same material. Write Dept. TE-5 for catalog of "Life-Guarded" Bermico Electrical Conduit.



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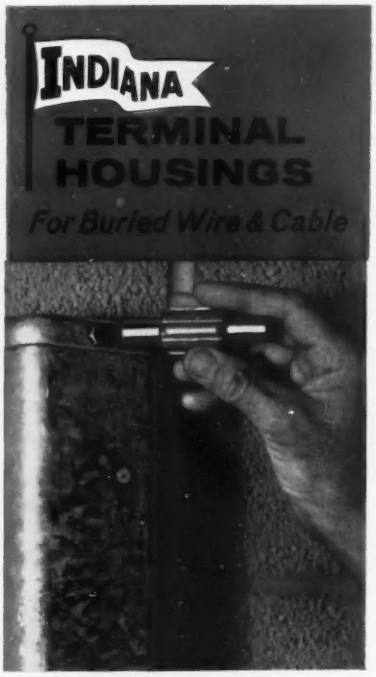

ENGINEERED TO SAVE YOU TIME AND LABOR

ONE screw like this is all that's required to complete the assembly of INDIANA Pedestal-Type Terminal Housings. This is typical of the time and labor-saving features to be found in these carefully engineered housings for buried wire and cable.

Made of heavy gauge steel and galvanized AFTER forming, INDIANA Terminal Housings provide long-lasting protection to terminal blocks, loading coils and/or splicer. Both pedestal and pole-mounted types, designed to accommodate from one to 400 pairs, are available.

Ask your distributor about these dependable, economical housings, or write for Bulletin No. TH-101R.

INDIANA
Steel & Wire Company, Inc.
Muncie, Indiana

to improve everything telecommunicative in this world, in outer space and in new worlds beyond the space. While we cringe at the stupidities of our various governments, here is a truly American industrial triumph to take the taste out of our mouths and the sting out of our critics.

The little Independent telephone companies hope for a share and a part to play in this telecommunications pageant. We may also hope that Mother Bell will feel so affluent that she will be more compliant about our toll settlements — and that her operating subsidiaries will catch the infection.

We may even hope that the eager beavers in a Kennedy-reorganized F.C.C. will not interfere with this amazing prosperity. That is only a hope. Unfortunately, too many of our semi-socialist regulators are cursed with a morbid dislike of healthy business profits — without which, we and they would probably be laboring on farms in a primitive economy.

Dishonest Distant Dialing

IN MIAMI, Walter Shaw, former employe of Southern Bell Telephone Company, has found the answer to Direct Distance Dialing charges. He has designed an electronic "parasite," housed in a neat 6″ x 8″ aluminum box. Attached to a telephone, it confounds the call recording devices; users are able to D.D.D. ad lib, without setting up a record for billing.

Shaw has sold at least one hundred of them at $1500 each, to bookmakers throughout the country.

According to the Miami Herald, telephone engineers are completely baffled. The contraption's viscera are embedded in a hard material that has defied their efforts to discover what makes them tick. They cannot remove the coating without destroying the parts, and Shaw refuses to enlighten them. "It's my brainchild," he says.

However, we fear that this noble attempt to make life sweeter for telephone users may wither on the vine. Shaw slipped on a legal technicality. He was arrested for making an unauthorized connection to a telephone. In Florida that is a misdemeanor.

Shaw obviously needs some partners with legal experience and mass production know-how. Jail is uncomfortable; and $1500 is too much for the average telephone subscriber. At a lower price, with legal safeguards, this device should sell by the thousands and make D.D.D. our most popular service.

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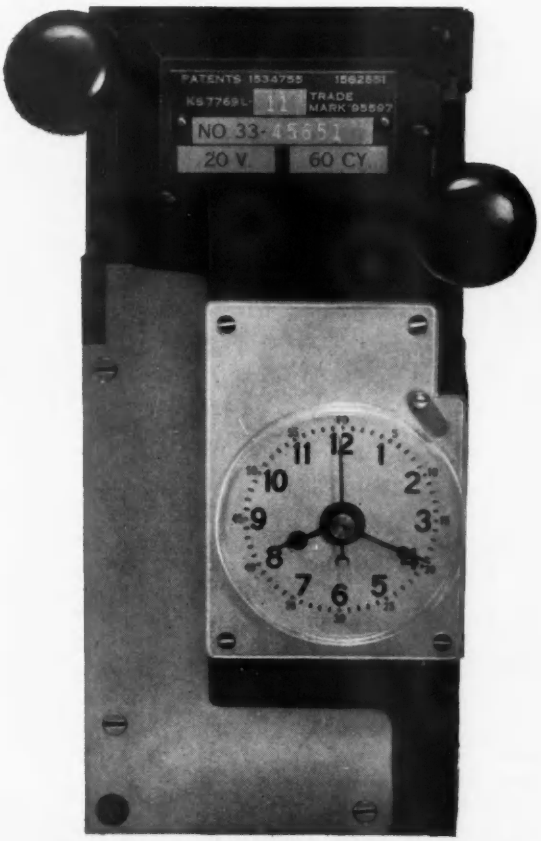
TEM 5-15-61

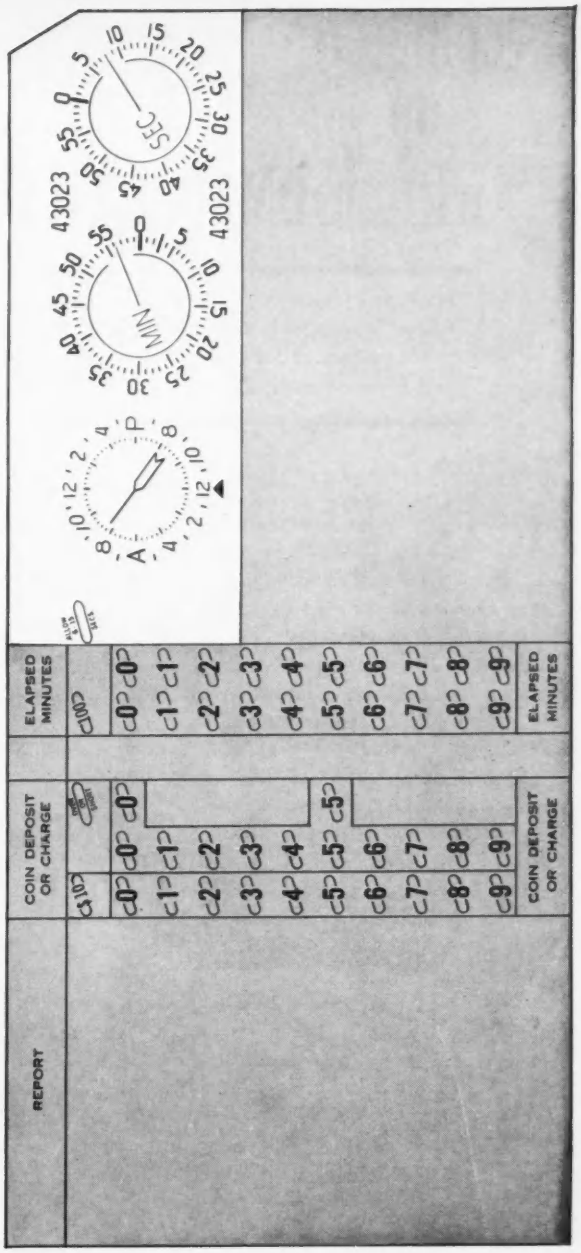
CALCULAGRAPH IS READY FOR MARK SENSING NOW!

If you are planning to use mark sense toll tickets now (or later) be sure your Calculagraphs are readily adaptable. Remember to do these three things now —

1. When ordering new Calculagraphs specify "set back" handles—this feature clears the way for mark sense toll tickets (or ANY SIZE ticket in fact).
2. Plan a program of modification of Calculagraphs now on your switchboard.
3. If you are still using the old round-type Calculagraphs, consider the economics of replacing them with the new space-saving Model 33 that will include all the latest improvements—set back handle, color-coded handles for easier operation and 60-minute dial to assure 100% accuracy on all calls.

If your analysis shows that mark sensing makes sense economically, or your present system requires a larger size ticket, consult your Calculagraph distributor today. Ask him about the set back handle feature as well as other modernization features of the NEW Calculagraph.





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keeping up with COMMUNICATIONS

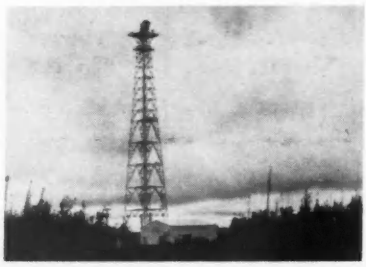
First telephone circuits of the Ballistics Missile Early Warning System (BMEWS) made available for the U. S. Air Force use between Clear, Alaska and Fairbanks.

First BMEWS Telephone Circuits Announced

THE FIRST telephone circuits of the Ballistic Missile Early Warning System (BMEWS) communications network have been made available for U.S. Air Force use between the missile detection station at Clear, Alaska and Fairbanks, the Western Electric Company announced late in February.

This initial link from Clear is via a high quality radio system connecting the Air Force stations at Murphy Dome and Pedro Dome, to the Alaskan Communications System office at Fairbanks.

These four stations are the first of 34 U.S. Air Force microwave ("line of sight") and tropospheric scatter ("over the horizon") radio stations being installed by Western Electric to provide two communication routes of unprecedented reliability and quality passing near, and available to the principal Alaskan cities of Anchorage, Fairbanks, Juneau and Ketchikan.



This TD-2 microwave communications tower stands like a lonely sentinel near Clear, Alaska. Over its antennas signals are received, amplified and transmitted onwards in the BMEWS Rearward Communications System. This type of station is a vital part of the rearward communications in BMEWS and is being built by Western Electric Co. for the United States Air Force.

A TD-2 communications relay station in the BMEWS Rearward Communications System nears completion at Murphy Dome, Alaska. Messages are received and transmitted in both directions by the horn shaped antennas on the tower. In each case the received signal is re-amplified in the shed-like building before being re-transmitted to the next station in this communications system which is being built by Western Electric Co., as prime contractor to the United States Air Force.

The BMEWS communication system from Clear will become operational sometime this summer. It will connect the huge Alaskan missile detection station with the North American Air Defense Command (NORAD) at Colorado Springs, Colorado. In addition to providing the quality of service required for transmitting warning messages, it will also complement and augment the existing U.S.A.F. "White Alice" Communications System.

The BMEWS project will give North America rapid warning of any impending ballistic missile attack. Powerful radars at three locations in Alaska, Greenland and England will scan polar skies for thousands of miles and be able to detect enemy missiles soon after they are launched. This information will then be transmitted almost instantaneously to NORAD through a communications system of data, voice and Teletype circuits. NORAD would then alert military and Civil Defense agencies.

The BMEWS site at Thule, Greenland and the connecting communication routes went into operation last October 1 and the Alaskan site is scheduled for operation during the summer. The operational date for the site at Fylingdales Moor, England has not been announced.

Western Electric, as prime contractor for the BMEWS rearward communications system, now has hundreds of men working on the project. Included are over 500 field men in Alaska, Labrador and Greenland that were recruited from the Long Lines department of A.T.&T., Bell Telephone Laboratories and 17 Bell Telephone companies as well as the Western Electric Company. Their task is to engineer, install and test submarine and land cables, and the microwave and tropospheric scatter radio systems. In addition, nearly 600 subcontractors and suppliers are aiding Western Electric in the project

Telephone Robots Assists Housewives In Sweden

ERICSSON Group engineers in Sweden recently announced de-

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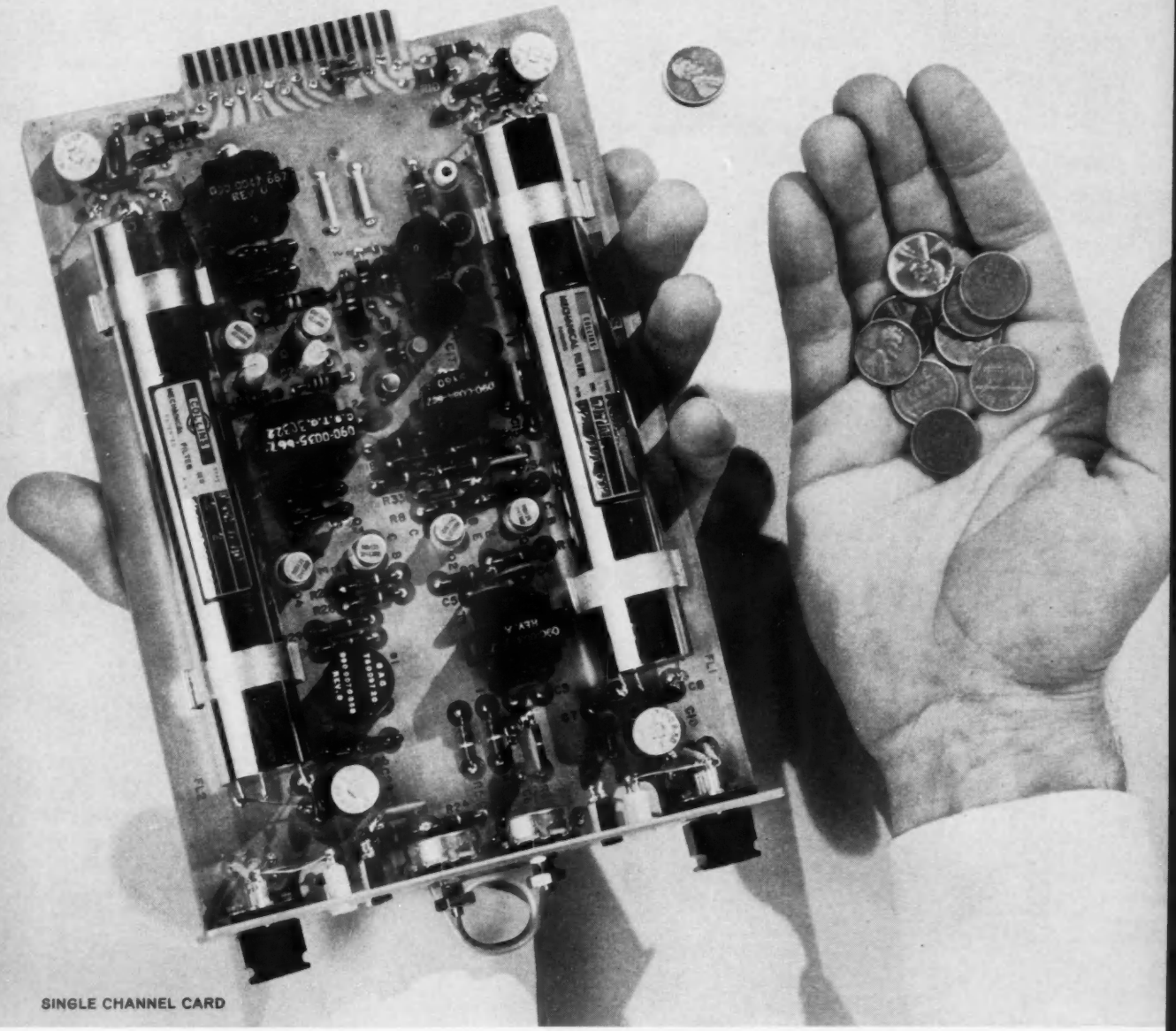

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NEW COLLINS TRANSISTORIZED CARRIER...UP TO 600 CHANNELS

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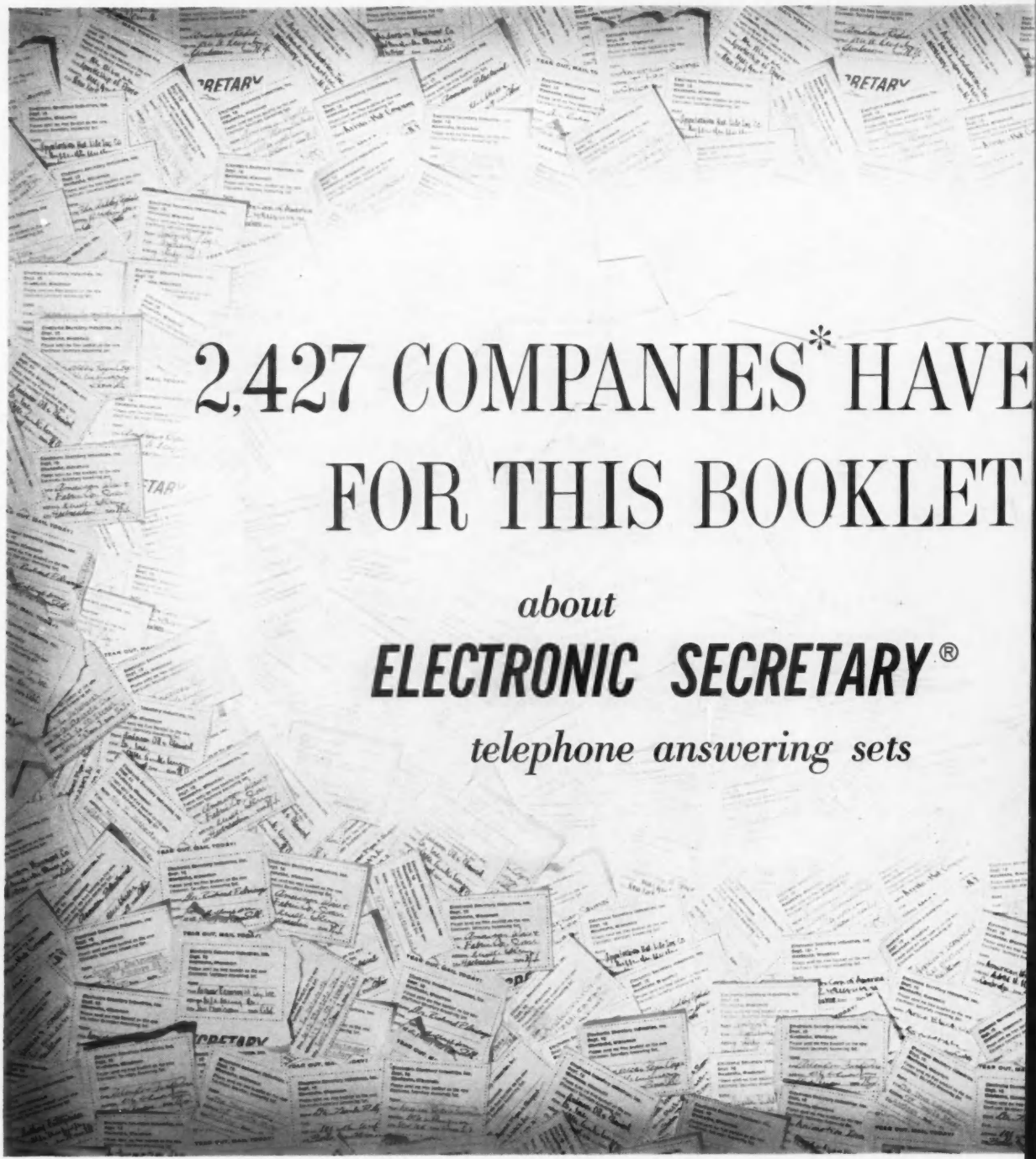

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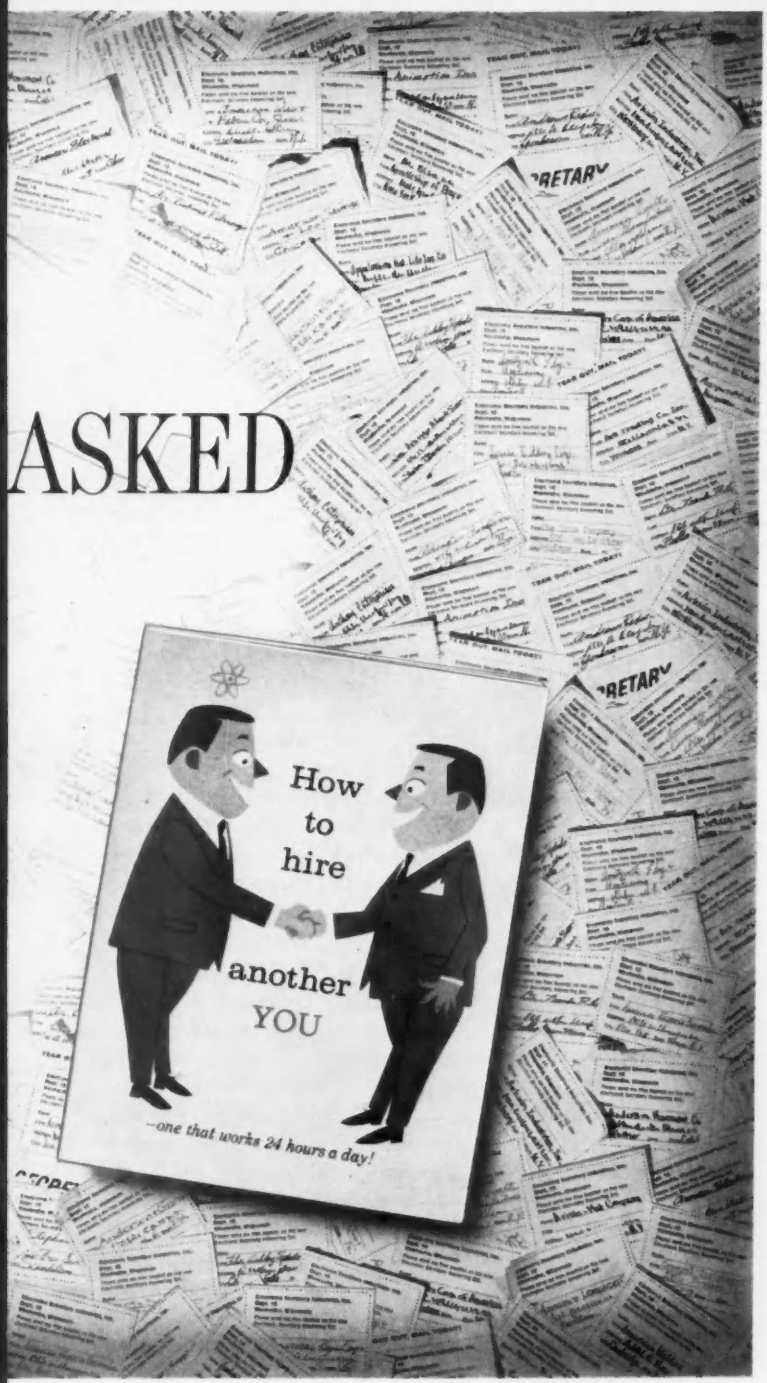
The response to our national advertising in leading business, news and consumer publications has been most gratifying. Hundreds of prospects have shown a definite interest in ELECTRONIC SECRETARY automatic telephone answering sets by requesting a copy of the informative booklet "How to hire another YOU," (shown above). These requests are being processed daily. You will be notified of all prospects in your locality.

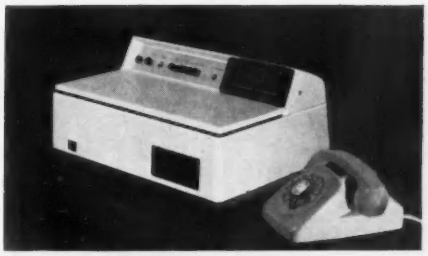
Be prepared to serve the prospects in your area. All three models are now available for immediate delivery. A demonstration model set up in your business office is the best way to insure quick sales.

HAVE YOU RECEIVED AN ELECTRONIC SECRETARY PROMOTION KIT? Additional kits are yours for the asking.

***2,427 inquiries have been processed through May 1st.*

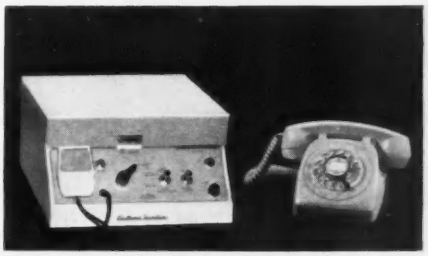


Complete line of ELECTRONIC SECRETARY telephone answering sets will meet every prospect's needs



LONG PLAY MODEL

Designed primarily for the company receiving a large number of calls or messages of great length. Answers the phone with an announcement message and receives up to two hours of incoming messages.



SHORT PLAY MODEL

Especially good for the smaller business. Performs the same functions as the Long Play Model but has a more limited capacity.

ANSWER ONLY MODEL

For those who want the advantages of automatic answering but do not need the incoming messages recorded.

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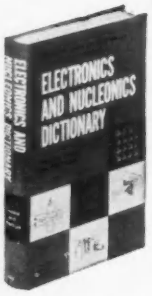

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velopment of a telephone-robot device designed to assist housewives who patronize laundromats — and who want to be sure a machine is ready for them immediately upon arrival. The device combines the best features of an electronic memory system and an automatic telephone answering service.

As described in a recent Ericsson publication, the system works in the following manner:

The telephone subscriber dials the number of the laundromat when she is ready to do the family wash. The automatic answering service then takes over. First, it checks the memory robot to determine if a machine will be available when the housewife arrives in, say, five minutes. Once this availability is confirmed and a machine reserved, the answering service reports that a washer has been set aside, urges the housewife to be on time and even reminds her to bring a coin for the meter. At the laundromat a "reserved" light goes on above the machine reserved for Mrs. Housewife.

If all machines are booked at the time the housewife calls, the telephone answering device automatically expresses its regrets, suggests that an inquiry be made a bit later and even counsels the caller as to the best hours to plan to do her washing that day. The washing cycles are controlled by punch cards.

Of course, the housewife is free to drop in at the laundromat in search of a free machine at any time. If she is lucky and finds one, the all-knowing robot immediately removes that particular washer from the list of "availables" and relays this information to the telephone-answering section of the automatic system.

Several of these robot laundromats are in use in Sweden and the system has also been demonstrated in Germany.

FAA Begins Operating High Speed Communications

NEW automatic high speed communications system, designed by the Western Union Telegraph Co., has been placed in operation by the Federal Aviation Agency to handle international air traffic control information and weather communications between Honolulu, the continental United States, and Southeast Asia.

FAA also opened at the same time a new air route traffic control center and international flight service station at Honolulu.

The new communications system, with an initial capacity of 2,000,000 words a day, was described as the first automatic message switching system of its type. Developed by Western Union and FAA over a two-year period, the switching system will service more than 50,000 miles of communications networks. It connects eight major stations as well as several smaller ones in the Pacific area.

Message traffic will be relayed through the center from Honolulu to Anchorage, Alaska; San Francisco; Canton Island; Fiji; Samoa; Australia; Wake Island; the Philippines; Japan; Guam; Midway Islands; and Kwajalein.

FAA has contracted with Western Union for construction of a similar system which is to be installed at Balboa in the Panama Canal Zone and is due for completion this year.

Open Honolulu-Tokyo Link In Weather Network

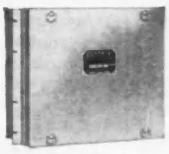
THE latest link in a global weather communications network — an unbroken chain of point-to-point radio teletypewriter and landline teletypewriter circuits which will eventually encircle the northern and southern hemispheres — began operating recently with the opening of a circuit between Tokyo and Honolulu.

The World Meteorological Organization, a specialized agency of the United Nations, coordinated and planned the network. The first centers in the system were activated last fall in New York City, Frankfurt/Offenback, Germany, Moscow, and New Delhi, India. Addition of Tokyo completed the Northern Hemisphere exchange program.

The next phase of the program will be establishment of a similar network in the Southern Hemisphere connected with the currently operating system.

When planning for the future...
...look to the past

FLOTROL BATTERY CHARGERS



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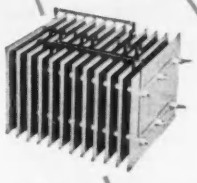
BAT-TAP D-C VOLTAGE REDUCERS



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The line of power equipment developed and manufactured by Lorain is the most complete in the telephone industry. 40 models of Sub-Cycle Ringing Converters, 550 models of Flotrol Battery Chargers, 43 models of Power Supply Units, 13 models of Tone Generators, 48 models of CEMF Cells.

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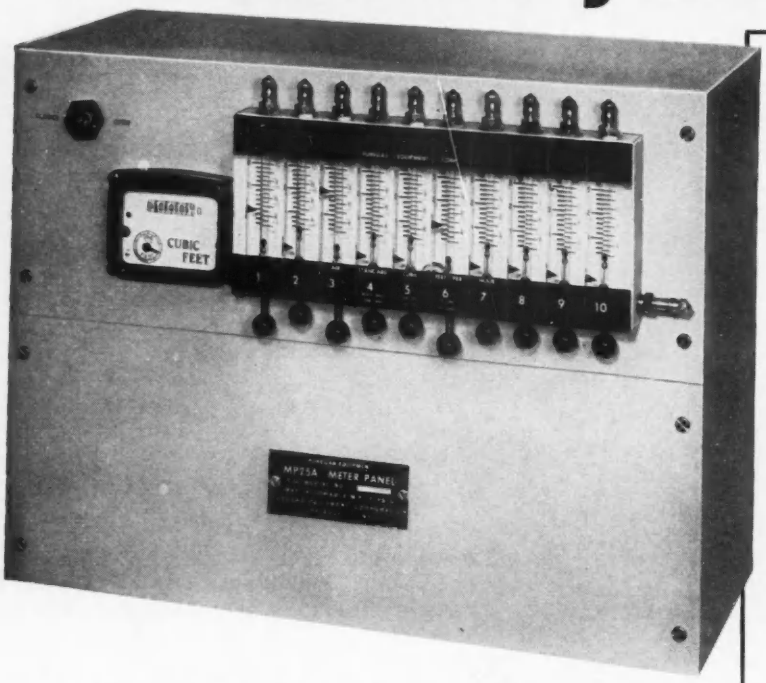
PARTNERS IN DEPENDABILITY

TO LENGTHEN CABLE LIFE AND CUT MAINTENANCE COSTS—

Pressurize your cables



Metering Panel of the PUREGAS Continuous Feed Pressure System. The panel monitors and distributes the flow of pressurized air from the PUREGAS Air Dryer to toll, trunk and exchange cables . . . measures the flow delivered to groups of cables or to individual cables . . . provides convenient central instrumentation.

Air Dryer of the PUREGAS system. This compact unit compresses room air and delivers it under pressure to a storage tank, where it is cooled to near freezing. Compression, storage cooling, then expansion to the lower pressures within the cable reduce relative humidity from 100% at high temperatures to less than 2% at 70°F. Air Dryers and Metering Panels, products of Puregas Equipment Corporation, are available via Graybar.

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1. pressurized with dry air supplied through PUREGAS equipment;
2. supplemented with GENERAL MACHINE PRODUCTS accessories.

PUREGAS equipment at a central location feeds a continuous supply of dry air under pressure into the cables . . . to keep moisture from reaching the conductors. As air is lost through the minute breaks that usually occur in older cable sheaths it is replaced automatically by dry air from the PUREGAS Air Dryer and Compressor.

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Pressurize to minimize outages . . . to lengthen cable life . . . to cut maintenance costs. PUREGAS and GMP equipment is distributed nationally by GRAYBAR.

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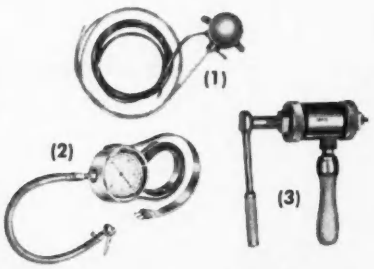

GMP Pressure Testing Contactors (1) located at strategic points, monitor pressure throughout the system and aid in detecting leaks. *Pressure Testing Gauges* (2) give precise measurements of pressure. *Pressure Guns* (3) inject compound into cable to make pressure plugs. These, as well as Pressure Testing Ells, Drills, Depressors, Sealing Compound and other tools for pressurized systems, are made by General Machine Products Company and are available via Graybar.

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TELEPHONE ENGINEER
AND MANAGEMENT'S

EDITORIAL

COMMENT

"Time For Excise Tax Action"

SUPPORTERS of the termination, reduction, or repeal of the Federal excise tax on communications services found themselves in a familiar spot on April 20 when President Kennedy submitted his tax program to Congress and urged that existing excise taxes be retained for another year.

The President, himself, devoted but little space in his tax message to the excise question. However, his brief reference to the tax and his explanation that "*as recommended by former President Dwight D. Eisenhower, it is again necessary that Congress extend the tax rates which otherwise would be subject to termination or reduction July 1 if no legislation is passed*" had a familiar sound.

Even President Kennedy acknowledged the close relationship of his words with similar statements issued by Presidents of the past when he said, "*Such extension has been adopted by the Congress on a number of previous occasions, and our present revenue requirements make such extension absolutely necessary again this year . . . . .*"

Such statements are not new to members of the telephone industry and the telephone subscribers of this country. In brief, the 1961 reissue of the statements proves only that Mr. Kennedy is as unwilling as was Mr. Eisenhower to end a wartime excise tax that should have been removed from the books years ago.

Like many other industry members and telephone subscribers we have been around long enough to remember when the Revenue Act of 1944 raised the Federal Excise tax on telephone service to its highest level. At that time the backers of the government's revenue-producing idea declared . . . "*The increased rates will be temporary and expire after the war,*" and "*The tax increase is designed primarily to discourage use of an essential service during wartime . . .*"

In the years since 1944 we have often expressed our opinion that the excise tax on telephone service had acquired a "*suspiciously permanent look.*"

That opinion is shared by many. As things now stand it does not require any particular knowledge of Washington affairs to come out of the whole situation with one inescapable conclusion: *In the absence of vigorous protests, Congress will go ahead and extend the local telephone tax for one more year and continue to ignore the status of excise levies on long distance telephone service.*

This conclusion serves to bring another fact to the front. And that fact can be based on the knowledge that *once again the real power, the pressure that can force action on the telephone excise problem lies in the hands of the nation's telephone users.*

Last year the impact of telephone users writing their Congressmen and urging repeal of excises on telephone services was clearly evident.

But last year and the progress made last year belong to the history books. The progress made in 1960 will grow in effectiveness if, and only if, there is an immediate upsurge in the efforts of all members of the telephone industry and their subscribers to again impress upon all Congressmen the fact that the excise tax on telephone services is unfair and discriminatory, and should be completely repealed.

We believe that upsurge in joint efforts of the industry and its customers is important. Unless it comes about, June 30 may well find the telephone industry and its subscribers still saddled with a "*temporary wartime tax*" that has taken another step toward becoming *permanent.*

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TELEPHONE ENGINEER
AND MANAGEMENT'S

WASHINGTON
OBSERVATIONS

"Telpak" Tariff Continues To Dominate Communications News

AT&T FILES COMPLIANCE LETTER

AT&T will ask FCC to reconsider Telpak decision . . . . Motorola files supplemental petition asking FCC to investigate Telpak tariff.

By ROLAND DAVIES and FRED HENCK

BY ALL standards, the biggest domestic communications news continues to be the American Telephone & Telegraph Co.'s Telpak tariff. Continued developments related to the tariff make it clear that Telpak will go on playing a large role in the thinking of the telephone industry, the Federal Communications Commission, the telephone companies' competitors, and large telephone customers.

As readers of this space are aware, the FCC has handed down an order providing that the communication channels furnished under the Telpak tariff should be derived from one broadband channel. The Commission directed AT&T to apply the tariff in that manner, and to notify it of the steps it has taken to comply.

Since then, in rapid order:

(1) AT&T filed its letter outlining the steps it has taken to comply with the Commission's interpretation, and making it clear it will ask the FCC to reconsider its decision;

(2) Motorola, Inc., filed a 63-page "supplement petition" asking the Commission to investigate the Telpak tariff, strike the tariff or ask AT&T to withdraw it, and hold a hearing;

(3) AT&T responded with a petition to the Commission asking it to strike the Motorola filing as uncalled for and not permissible under the FCC's rules; and

(4) AT&T applied for permission to withdraw a tariff amendment, which had been filed to be effective May 12, and which would have specified that Telpak services would be provided over facilities most appropriate and efficient to furnish the service.

In asking for permission to withdraw the tariff amendment, Long Lines declared that "Without in any way qualifying the position of this company with respect to the proper interpretation of the tariff, it is desired to delete the proposed amendment, thus leaving, for the time being, the language of the tariff in the form in which it was originally filed, so that the question of the proper interpretation of the tariff may be further considered by the Commission without the necessity of determining whether or not the textual amendment should be suspended."

In the request that the FCC strike Motorola's supplemental petition, AT&T said it is "reasonably entitled to know" whether the Commission will accept the filing before it enters in the complex job of preparing a response. AT&T asked that if the FCC decides to accept the filing, it be given sufficient time thereafter to prepare a reply. Motorola's original petition for suspension of Telpak has been pending for some time.

AT&T Vice President H. T. Killingsworth, in charge of the Long Lines Department, reported in the compliance letter that Long Lines and Bell System associated companies' operating personnel have been advised not to accept any new Telpak orders, or furnish any Telpak services not completely processed as of April 14 — the day the FCC order was released — "until such time as the Telpak channel, including any derived channels,

can be provided within a given carrier spectrum assignment."

Regarding the services in effect as of April 14, the operating personnel have been instructed "to take immediate stpes to rearrange the services to comply with the Commission's interpretation to the extent possible without plant additions."

In connection with existing services where the FCC's interpretation could not be complied with without plant additions, the operating people are to "obtain and report information with respect to the construction of new plant necessary to achieve compliance."

Mr. Killingsworth added that the operating people have been told to "render bills under the Telpak tariff only in those cases where the service, including any additions to existing Telpak service, is furnished over a single carrier spectrum assignment and in those cases where Telpak service orders covering billing and settlement arrangements were issued, completed, and effective on or before April 14."

To determine whether Telpak service is furnished over a single carrier spectrum assignment, engineering and plant operating personnel were given rules as follows, the letter pointed out: "All the derived channels in a Telpak channel should be on a single carrier assignment as follows: Telpak A — same group or N or ON system; Telpak B — adjacent groups or one ON system; Telpak C — adjacent groups or one supergroup; Telpak D — adjacent supergroups."

The letter noted that "It was pointed out that the larger Telpak channels should not be furnished by parallel carrier systems; for example, a Telpak C channel should not be furnished by means of five N systems."

In its supplemental petition, Motorola declared that Telpak is not a new service, and instead it "constitutes nothing more than a revision in the method of applying charges for the existing forms of private line service now under investigation in formal proceedings before the Commission."

Motorola took the position that Telpak rates are unjustly and unreasonably low, and "cannot be justified on the basis of costs, 'competitive necessity,' or any lawful basis." It said the cost data submitted to the FCC by AT&T are "grossly understated," and "were derived by allocation methods and assumptions contrary to all recognized practices in cost determination for ratemaking purposes."

The filing contended that the Telpak rates will burden users of other services, and "accord undue and unlawful preference or advantage to certain users of telephone company services." If permitted to remain in effect until the private line rate case is completed, Motorola continued, the Telpak tariff will damage members of the public receiving service under it, "when and if the current extraordinarily low charges are ordered increased to a just, reasonable, and non-discriminatory level."

Other contentions in the filing, which had been developed in the first petition, were that it is discriminatory not to permit privately owned microwave circuits to interconnect with telephone company facilities, when Telpak users have such interconnection rights, and that the tariff will lead to a monopoly in the manufacture and sale of microwave radio equipment.

Since the telephone company took the position in the private line rate case that the rates involved were too low, Motorola declared that the "only logical course of action" for the FCC is to schedule a Telpak investigation, reopen the private line and data transmission channel rate cases, "and conduct a consolidated proceeding to determine what, if any, services may lawfully be furnished under the classification of Telpak, and to prescribe just and reasonable charges" for the various private line services.

Requests FCC To Terminate, Dismiss Interconnection Case

SETTLEMENT and disposition of the FCC case growing out of the American Telephone & Telegraph Co. Long Lines Department's tariff covering interconnection of telephone company facilities with those of "right-of-way" companies, through an agreement on tariff revisions, has been asked by AT&T and the railroad parties to the proceeding.

The proposed new tariff, filed with the joint petition for dismissal of the proceeding, would permit interconnection of customer-owned and telephone company facilities at both ends of a through circuit for emergency calls, and at either end, but not both, for calls related to the safety, continuity, or reliability of railroad service.

The proposed revision to the private line general regulations tariff relates to power, pipeline, and railroad companies. It provides that customer-owned facilities may be interconnected to full period private line voice services, provided that "facilities of the customer will not be connected to a local or toll central office line to form a through connection" except under the circumstances specified above.

It also provides that "Telephone circuits of the customer extending between or beyond exchange areas of the telephone company will be connected to a local or toll central office line to form a through connection only through manual switching equipment, or an attendant's position of dial PBX equipment furnished to the customer by the telephone company. Such equipment or position may be located at either or both ends of the customer's circuit." As previously pointed out, however, it could not be used at both ends on the same call except in cases of emergency.

The tariff changes eliminate two major provisions of the original Long Lines tariff filing from which the hearing case started — "grandfathering" of private systems which were permitted interconnection before the tariff became effective, and restrictions on the amount of microwave which could be included in a specific route — and instead apply equally to all customer-provided facilities of the right-of-way companies.

Those filing the joint petition for dismissal of the

Next page, please

case did not include several parties to the proceeding — General Telephone & Electronics Corp. U. S. Independent Telephone Association, Central Committee on Communications Facilities of the American Petroleum Institute, and National Committee for Utilities Radio — but there was no indication of any opposition to the request.

In their joint filing, Long Lines and the railroads concluded that "The record shows that the railroads are in a unique position insofar as public safety, welfare, and the national defense are concerned. The interconnection provided for the railroads is for calls occasioned by their special circumstances and operating requirements.

"The interconnection permitted the railroads by the proposed tariff revisions is not for ordinary everyday telephone calls such as might be made by any telephone user. The qualifications that are specified in the tariff as to subject matter of permissible interconnected calls show that the bulk of such calls would be made by personnel of the railroads' operating departments. Personnel engaged in functions such as freight solicitation, claims, accounting, financing, law, real estate transactions, advertising, and public relations would, in the normal course of events, have little or no occasion to make an interconnected call which met the specified conditions."

Kennedy Urges Continuation of Communications Excise Tax

PROSPECTS for termination, reduction, or repeal of communications excise taxes this year took a long step backward when President John F. Kennedy, in an action which was not unexpected, urged in his tax message to Congress that existing excise and corporation income imposts be retained for another year.

At the same time, the President's message gave scant comfort to excise repeal proponents for next year. He forcast administration proposals for a broad-scale revision of the tax laws in 1962, following an extensive study, but declared that the second set of proposals will be "aimed at thorough income tax reform."

About 80 bills have been introduced in the 87th Congress calling for communications excise repeal, repeal of the tax on general (local) telephone service, or providing a termination date for the communications taxes.

It is anticipated that an effort will be made, in committee and on the floor of Congress, to obtain approval for such legislation. The administration opposition, however, dims the prospects of success considerably, and means that supporters of repeal will have to work that much harder.

AT&T Replies To Western Union Complaint On TWX Tariff

THE teletypewriter exchange service (TWX) tariff of the American Telephone & Telegraph Co. does not "contain any specification of the methods employed in establishing connections," AT&T has pointed out in a letter replying to a complaint of the Western Union Telegraph Co.

The letter, by Assistant Vice President Richard W. Miller, declared that "it is plain that Western Union is complaining of a temporary, trial arrangement aimed at improving the telephone company's (TWX) service offered under the presently effective tariff. The gradual change from manual to dial operation in long distance telephone service has been made without the requirement by the Commission of revision in the tariffs, for the obvious reason that no revision was necessary."

Mr. Miller pointed out that "As the Commission knows, (AT&T) has for some years been working toward the conversion of the teletypewriter service to dial operation. This work has progressed to the point where it is now planned to convert the TWX service to dial operation in the fall of 1962. . . .

"As part of the preparatory work looking to the conversion of TWX to dial operation, it was considered desirable to undertake field trials to provide needed information with respect to technical arrangements and operating characteristics. A preliminary trial of this nature was conducted during a three-month period in 1956, involving customer dialing among 35 stations in Chicago, New York, and Baltimore. Preparation for a second trial, regarding which Western Union now complains, was commenced in fall of 1960 and the trial was started in February of this year."

Western Union's complaint, noting that the cities where the dial TWX trial is going on are among those where the telegraph company offers its customer-to-customer telex service, stated that the dial TWX experiment will have an adverse effect on its marketing program.

Mr. Miller declared that in selecting the 44 trial stations, "no consideration was given as to whether the customers involved were or were not also customers of Western Union."

FCC Submits Tariff Suspension Proposal

THE Federal Communications Commission has submitted to the Bureau of the Budget for customary clearance, and expects to submit to Congress within a relatively short time, a legislative proposal which would give it authority to suspend common carriers' tariffs up to a maximum of six months, it has been reported exclusively by *Telecommunications Reports*, Washington correspondents for *Telephone Engineer & Management*.

The Commission proposed last November a change in the law to permit it to suspend tariffs for up to 180 days, rather than the 90-day restriction in the present statute. Both figures are maximum, and any suspensions may now and could later be for short periods if desirable.

Ordinarily, Budget Bureau clearance requires considerably less time, but the new administration has, of course, been reviewing since President John F. Kennedy took office the various legislative proposals offered by agencies in the later stages of the Eisenhower administration. — *Roland Davies and Fred Henck.*

TELEPHONE ENGINEER
AND MANAGEMENT'S

REPORT

FROM THE FIELD

A New Service Observation System

NEW
SMALLER COMPANY
HELPERS

A Service Observation System incorporating the features described by this article has been in everyday use in Lorain, (Ohio) Telephone Co., exchanges for about two years. The low-cost system has demonstrated the value of a Service Observation System for medium and small size telephone companies. It also offers a new sales opportunity as a customer service.

By R. H. HERRICK
Chief Engineer, Lorain (Ohio) Tel. Co.

WE FEEL a bit lonesome. We aren't a popular department like *Ehinger* or *Perigo;* neither are we an erudite contributor on some deep subject, nor a chuckle-writer to bring you laughter and relaxation. We're just a guy who heard a casual remark, had an idea, asked questions, received knowledgeful answers, put two and two together, added some for good measure and ended up with something useful, and *John Reynolds* is letting us share our experience with you for whatever value it may offer.

Before we serve the meat of this article perhaps we should label the dish and be sure we all know what it is. The telephone company is a "service" organization. Its product is an intangible, largely measured by public opinion. Obviously the mechanics of adequate facilities and satisfaction of the public's communications needs are important ingredients of good public opinion, but those are not enough. The telephone company must also see that its employes give a good impression in all of their contacts with the public. It requires only a single case of employe discourtesy, inefficiency or lack of interest to "sour" a subscriber and turn him from a friend to an antagonist.

Telephone companies generally recognize this important fact, and place particular emphasis upon the training of their personnel who come into contact with the public. However, good training equates to good public opinion only if consistently practiced by the company's employes in their day-by-day public relationships.

We must recognize the fact that we humans, however well trained, tend to forget the finer points (and sometimes the major ones) of our training in the humdrum of day following day on the job. We need reminders from time to time. However, such reminders, to be effective, must tie to our own performance, specifically. Reminders of a general nature are likely to be shrugged off without adequate appreciation of their personal applicability.

A Product That Cannot Be Seen

MALPERFORMANCE by a factory worker shows up as a fault in the product. The fault can be seen and demonstrated to him. Thus, he is brought to full recognition that the reminder applies to him particularly, and such recognition is the psychological precedent to a receptive attitude.

By contrast, the "product" of the telephone company employe who deals with the public cannot be seen. It is an intangible, the impression he gives to the subscriber. The impression is given by what he says, and how he says it.

The usual methods of supervision lack the essential educational ingredient of specific citation. Discovery of

faults and the ability to cite them definitely can only be accomplished by "listening in on" the employe's contacts with subscribers. This is the role of service observation. The Service Observation System described by this article provides the means for doing this effectively, at a cost which the smaller telephone companies can "prove in".

A Traffic Superintendent Recognizes A Need

ABOUT two and one-half years ago our traffic superintendent remarked that he envied his counterpart in the big telephone companies. To our incredulous "How come?" he explained that the big company man has the benefit of service observation to assist in keeping his bevy of glamour girls headed along the straight and narrow path of proper phraseology and unruffleable good temper.

Our traffic man was in a justifiably pessimistic mood. He had no hope that our company could afford a Service Observation Board. He knew that the more or less standardized SOB (no levity, please!) is a highly specialized setup, costly, requiring considerable floor space, and much too long on operating costs to be economically justified by our company (a typical medium-sized one) in spite of his very real need.

His pessimism became a challenge. We decided to do something about it. A completely "different" approach was indicated, recognizing the special needs and economic problems of the smaller telephone companies as compared with the large ones.

First, it seemed necessary to: (1) broaden the overall usefulness of the Service Observation System by making its benefits available to other departments in addition to the traffic department; (2) eliminate the high cost of full-time service observation operators, and place observation conveniently and efficiently in the hands of the supervisors where it really belongs; (3) provide those facilities which would further the "educational" usefulness of service observation; and (4) hold costs to a figure which could be afforded by the medium-sized and smaller telephone companies.

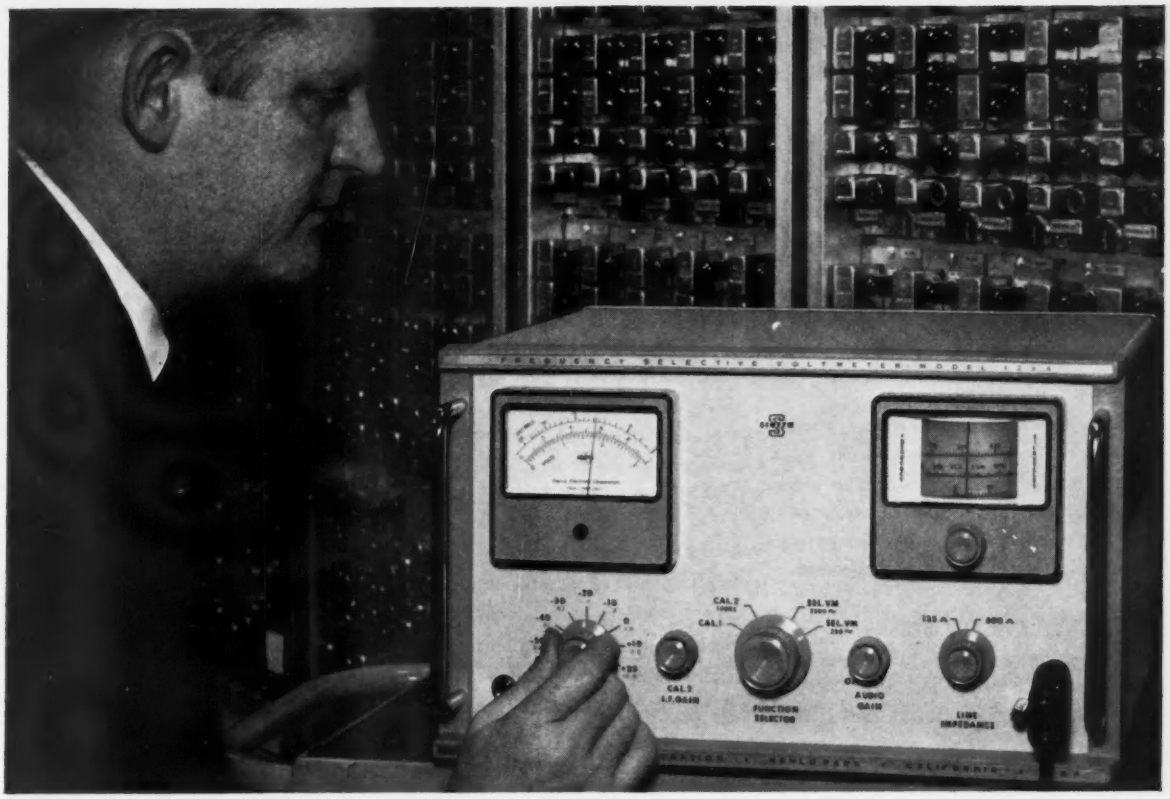
Questions were asked and comments invited from several traffic managers, chief operators, floor supervisors, and even the girls at the positions and, following the concept of broadened usefulness, from commercial managers and plant operations supervisors whose people deal with the public by telephone or over counters or desk.

The persons consulted represented telephone companies of a variety of sizes from up to 50 positions, lines or pickup microphones on which observation would be desired, to as few as 10. Since these were all down-to-earth practical telephone people, representative of various activities in a range of medium-sized and smaller telephone companies, their ideas constituted a dependable guide to design of a Service Observation System particularly suited to use by such medium and smaller sized telephone companies.

The finally-compiled list of necessary or desirable capabilities posed a formidable problem of design to keep within the objective cost limitations. However, we donned kilts and plaid, hardened our hearts against

Please turn to page 34

The standardized 30-selection Control Unit. The 50-selection "size" uses the same cabinet, with the 20 additional selections mounted in the upper left panel. Typical of use by other department heads, CHARLES MURRAY, traffic superintendent, Lorain (Ohio) Telephone Co., is listening to Routined Observation while performing other duties not requiring concentration. A dictating machine used for both dictation and recording of Service Observation, is at Murray's left; recording and playback for Service Observation are under the control of the two lever keys to the right on the Control Unit.



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frills, and somewhat to our surprise discovered that we could hit the target of cost limitations without the sacrifice of needed capabilities.

We owe much to the sound practical assistance of Lorain Telephone Company's staff and that of Lorain County Radio Corporation, the latter an oldtimer in the radio and telephone specialty equipment field, and the firm which undertook the job of manufacturing the system.

Design Objectives

THE following paragraphs outline the design objectives which we found could be satisfied. These are incorporated into the system now in use by Lorain Telephone Company and available[1] to other telephone companies.

Consider first the concept of expanding the usefulness of a Service Observation System. The term "service observation" has in the past been associated particularly with the monitoring of traffic operator positions, but why should service observation be so limited?

A unique concept was born out of that question. Information operators, repair service clerks and commercial people dealing with the public are "human" too. A Service Observation System should be able to do multiple duty in the medium and smaller telephone companies where part time use will satisfy the needs of any one activity. Its use can be shared by several departments. Its benefits should be available to supervisors of the several departments, not alone Traffic, whose employes are dealing with the public. Further, it may be made available to the general manager whose interests encompass all departments. This concept of extending monitoring capabilities to several departments was welcomed by general managers, commercial office managers and repair department supervisors.

Since economy is an important criterion, one of the system design objectives was to avoid use of valuable floor space. This suggests that the observer's equipment, which we have called the "Control Unit," should be small enough in size that it can be placed on the rear of a desk top. It should occupy but little desk top area to leave generous space for paper work.

Further, the Control Unit must be so simple and convenient in use that observation can be "picked up" by supervisors during brief off-the-floor periods, and by the chief operator, the commercial office manager or repair department supervisor during free-time moments.

Such design, aimed particularly to make short period observation simple and easy for the observer, is wholly practical and it avoids the high cost of the specially-trained service observation operators characteristically required by the conventional Service Observation Board.

Additionally, and of very real value in furthering the educational objectives, it places service observation directly in the hands of the supervisors immediately concerned. They, more than anyone else, know their respective personnel, and are in the position to take the most effective action when an error is observed. *(To be continued in the next issue.)*

MISS WILMA JACOVETTI, chief operator, Lorain (Ohio) Telephone Co., is using the earliest design of a 50-selection Control Unit. Note the large size of this early Control Unit; the current design, shown in the other illustration, provides the same features at much lower cost, occupies considerably less desktop space and offers more flexibility in application.

How A Financial Public Relations Program Can Help Your Company

A COMPLETE FPR PROGRAM

Building and holding shareholders' goodwill, or attracting new stockholders is basically the same as selling a product. The product to be sold is the company itself. And this requires as much, if not more planned, well directed effort as selling the company's products. Financial Public Relations is a highly important endeavor, separate and apart from the ordinary public relations and advertising programs.

By DAVID SKYLAR
Vice President, The Griswold-Eshleman Co., Cleveland, Ohio

FINANCIAL Public Relations is not lofty or complicated. It is basic and can be comprehensive without being complex.

It applies to those activities aimed at developing good will with security owners; it supplies facts to all those who are interested in, or influence the investment of securities; it seeks the support of security owners who may buy the companies' products; it asks for the support of employes; and it promotes respect for the company by the community and the public.

Comparatively few companies recognize the importance of good Financial Public Relations — sometimes not until it is often too late. Financial Public Relations means strengthening of ties of the company with two primary groups: (1) The security owners; and (2) the financial and investing community. This group consists of security analysts, brokers and underwriters, financial editors, mutual fund officials, and bank and trust investment officers.

In many corporations the secretary or clerk of the corporation, who is usually responsible for carrying on correspondence with stockholders, arranging annual meetings, and reporting on proceedings, handles all so-called financial public relations. This arrangement is often quite satisfactory for corporations with a limited number of stockholders. However, growing corporations recognize the need for a planned financial public relations program.

Interest of Top Management Needed

AN effective *Financial Public Relations* program *is based on a plan*, a plan developed to suit your company's particular needs.

Vital to any corporate Financial Public Relations program is the active interest of top management which recognizes its responsibility to serve the interests of stockholders as well as the other publics involved in business. Unless the responsibility for a stockholder

AE has the right equipment for your ***direct burial*** *installation*

What do you need for economical, easy-maintenance burial? Do you need a cable that handles easily, installs quickly? *AE's got it* in General Cable DS Qualpeth. It's specially engineered for fine underground transmission.

Need the economy of polyethylene construction in distribution wire? *AE's got it* in Alphaduct armored wire.

Need sturdy housings with easy access to terminals? *AE's got 'em!* Need loading coils that insure noiseless transmission? Bright warning signs to prevent digging up of your cable? *AE's got 'em!*

To get any or all of these essential buried-plant products, just contact one man—your AE representative. He'll give you full details on all of them.

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GENERAL TELEPHONE & ELECTRONICS

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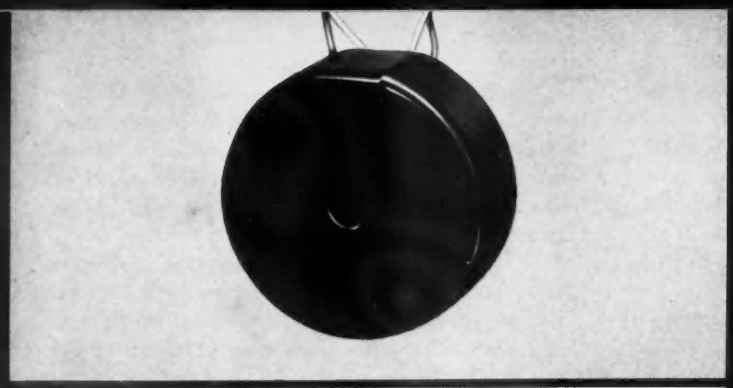
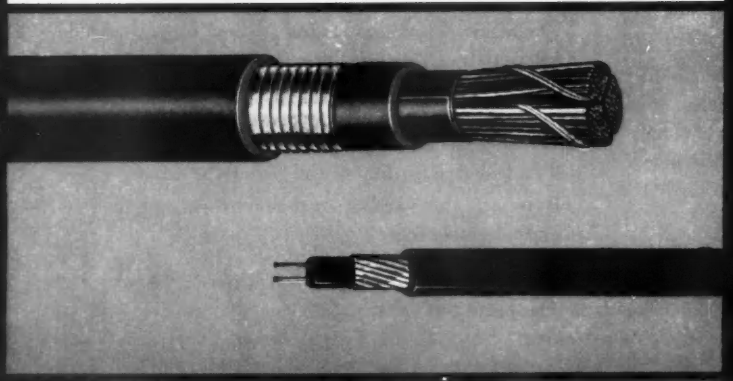


AE TYPE 60 LOADING COILS. High-voltage coils for use with today's plastic cables. Order them singly or in assemblies of 3, 6, 12, 18, 25 or more coils. U-shaped clips snap on to assemblies to make installation quick and easy.

TERMINALS give easy access to all cable pairs for testing, splicing, loading, protection, cross-connecting and wire distribution. All steel housing. Pedestal type or pole-mounted models. Sizes to accomodate 6 to 400-pair cable.



DS QUALPETH by General Cable. Double polyethylene, plastic-insulated cable gives you extra protection. Choice of aluminum or copper shielding. In conductor sizes 26, 24, 22, and 19 AWG. From 6 to 400 pairs.

ALPHADUCT ARMORED UNDERGROUND DISTRIBUTION WIRE. Available with extra-rugged rubber insulation and neoprene jacket, or with economical polyethylene insulation and jacket. Both types have flat steel ribbons wrapped around insulated conductors.

WARNING SIGNS in eye-arresting yellow field with red and black letters. Gives visible location of cable route, provides protection against digging or trenching. Heavy gauge steel frame. Post is plastic coated to resist corrosion.

relations program is assumed by top management, little will be accomplished.

Policy decisions must be made so that a Financial Public Relations plan can be effective. This project must be the responsibility of your company's chief executive officer — working closely with other people involved, i.e., advertising agency, publicity counselor, etc.

Objectives Of FPR

THE objectives of a comprehensive *Financial Public Relations* program are many. Since each program is tailormade, specific objectives should be chosen to accomplish those specific goals set by management:

(1) — **To broaden the base of ownership of the corporation's securities.**
(2) — **To maintain a fair market price for the corporation's securities.**
(3) — **To win the allegiance and support of the rank and file security owner as a sound and durable basis for continued operating control by management — to prevent "raids" by corporate pirates.**
(4) — **To raise the prestige of the corporation in the financial community.**
(5) — **To reduce the turnover among shareholders and promote holding the stock as a long term investment.**
(6) — **To encourage stockholders to consume the products of the company or voluntarily to recommend their use.**
(7) — **To promote understanding and, therefore reduce criticisms of management and company policy by stockholders.**
(8) — **To secure the support of shareholders as a source of new capital.**
(9) — **To secure favorable recommendations of company securities by investment counselors.**

Of these many objectives, several specific goals should be set for your Financial Public Relations program.

In initiating this program, a survey of stockholder attitude and interest is fundamental, and often desirable More than guesswork is needed to get a program started in the right direction.

A survey offer would be the first step in a FPR plan. From the data obtained through surveys, specific objectives should be established. After the FPR program has been underway for a long enough period of time — re-survey the control group to determine any changes in attitudes.

The FPR Plan

BUILDING and holding the security owners good will, or attracting new security owners is basically the same as selling a product. *The product to be sold is the company itself.* The most effective means of "selling" security owners are direct communications.

Stockholders, to a degree, expect direct communications to show the company in good light, much the same as they expect a salesman to praise the product he sells. The effectiveness of the direct communication depends entirely, therefore, on how well these materials appeal to a shareholder's motivating senses.

If, on the other hand, a company is praised for performance by friends or confidents, or by anyone "other than the security owner himself," a particular, almost selfish type pride in possession develops. The stockholder feels that he has made a good "buy" and will hang on to your stock.

Who are these "other than company" influence agents? Formally, they are the business paper editors, newspaper editors, financial editors, trade journal editors, radio-TV newscasters, investment counselors, and a host of others.

Informally, they are friends, neighbors and others who may not receive *direct* communications from the company but have, from the above communicators, heard of the increasing stature of a company.

The *direct* communications have proved very successful, but the company which has done the most in "selling" itself to its stockholders, and attracting others to invest as well, is that company which proceeds in accordance with a well-planned Financial Public Relations program. This type of program reaches all through all media — it creates favorable public opinion by disseminating information to everyone.

Direct Communication With Security Owners

SECURITY owner communications must be continuous. New security owners are continuously buying into corporations, while others are selling their shares. With the ever changing turnover in the stockholder public, the communications system to and from stockholders must be in uninterrupted operation.

The media of communication selected for a stockholder relations program must be chosen to suit your specific needs and problems. Certain media such as annual reports and dividend enclosures are fundamental to all stockholder relations programs; but additional media will be added according to the "job to be done."

Here are the various methods of promoting good stockholder relations:

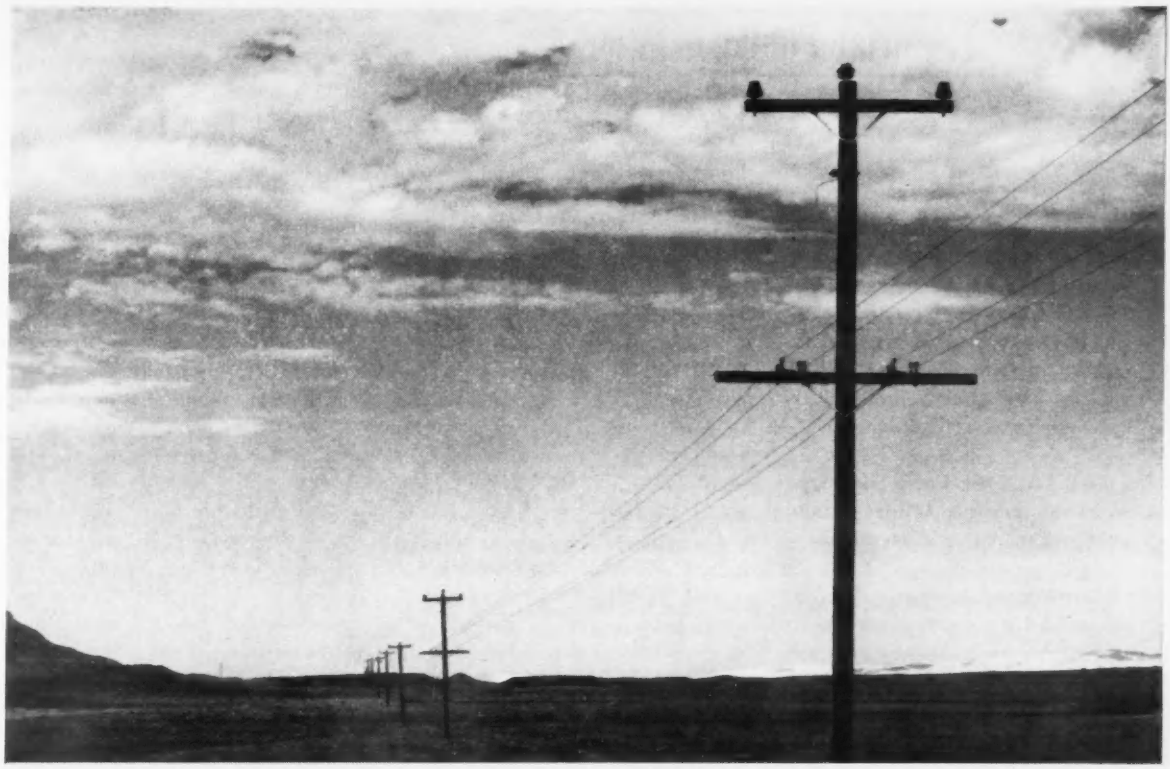
The Annual Report

The basic tool of any direct communication with the security owner is the Annual Report. This report may take the following forms:

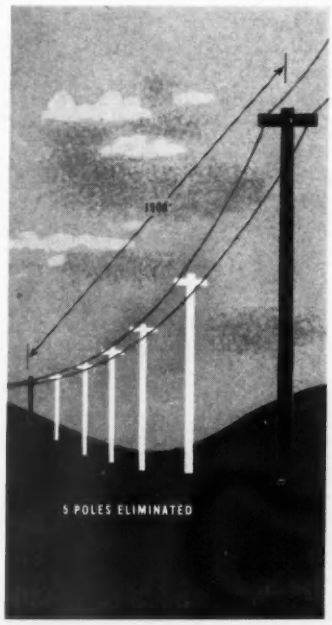
(1) Publish Inviting, Informative Annual Report. Review year's operations, interpret significant developments, forecast future business. Show growth, analyze earnings, indicate competitive position and trends with tables and charts. Illustrate: products, applications, plants and installations, use photographs or drawings. Point up text with maps and trademarks. Auditors' certificate addressed to stockholders.

(2) Distribute Special Annual Report to Employes to explain how company operates business so it can pay: wages, taxes, interest on bonds and dividends to stockholders. This report stresses cost of equipment,

Please turn to page 40



NS SPECIAL 080-25 COPPERPLY® gives greatest economy for joint pole installation



NS SPECIAL 080-25 COPPERPLY also makes possible long-span installation up to 1900 ft. on communications installations, using insulated wire and special construction design.

Now you can string Special 080-25 COPPERPLY jointly with power lines at about half the cost of previous conductors suitable for such installations.

When you substitute Special 080-25 for iron wire or for .102-30 EHS copper-coated wire on joint construction, you get maximum service flexibility at less cost. Extra strength of Special 080-25 means it can be strung to 540 foot spans in heavy loading districts, although practical application to avoid mid-span hits would normally limit span lengths to approximately 430 feet when used bare.

ADDED ADVANTAGES—with Special 080-25 COPPERPLY you get these added advantages:

- **Carrier Capability**—four mils of concentric copper coating assures excellent carrier transmission
- **Economy**—installed cost per mile is approximately equal to galvanized wire, grade 135
- **High Strength/Low Weight**—with a breaking strength of 1325 lbs., weight of 92.4 lbs. per mile, Special 080-25 provides a greater strength-to-weight ratio

For the complete story on Special 080-25 COPPERPLY and other standard sizes, contact National-Standard Company, Niles, Michigan C-61-3

NS NATIONAL-STANDARD COMPANY

NATIONAL-STANDARD COMPANY
Niles, Michigan

"Financial Public Relations"

(Continued from page 38)

plants, raw materials, supplies, research and development, insurance, maintenance, fuel, water, power. Its purpose is to show employes that there is a mutual interest binding them to stockholders in the welfare of the company, that they prosper when the business prospers and that workers and investors alike depend on the customers for their earnings.

(3) Advertise Facts Highlighted in the Annual Report in influential newspapers and magazines — so public can understand important role corporation plays in the economic and social life, not only of community but nation. Advertise how company uses money received from sale of products and services to buy materials, purchase tools and equipment, pay wages, taxes, finance expansion, maintain plants and machines, pay interest on debts, repay loans and set aside funds for depreciation, dividends.

The Annual Meeting

(1) Notice of Annual Meetings should be mailed stockholders, stating time, place and purpose of meeting, sometimes with annual or interim report, especially inviting investors to attend. Similar information is published in legal advertisements in newspapers or magazines, usually several times prior to meeting. Proxy ballot, proxy statement and letter soliciting proxies may be included appropriately with the notice mailed to stockholders.

(2) Provide Agenda of Meeting, so security owners will know sequence in which matters will come up for discussion and action. This enables chairman to conduct orderly meeting, gives security owners information about when to vote, ask questions, discuss any other matters or make suggestions. This safeguards the chairman's reputation for acting fairly and in a businesslike way, as it eliminates accusations of "railroading through" those measures management sponsors or supports, or of shutting off just criticism by the stockholders.

(3) Publish Distinctive Dividend Notices as soon as they are declared in pertinent newspapers and magazines, to attract attention of stockholders, brokers, bankers, investors and others interested in securities. These advertisements may be readily identified by use of trademarks, distinctive types of cartoons, but all should conform to regular style. Confirm action by letter to securities exchanges where company's stocks are traded.

(4) Arrange Plant Tour for stockholders' meeting. Schedule for recess while ballots are counted or after meeting. This creates more interest among stockholders in your company, enables them to see the plant, its equipment, the products, manufacturing operations, major improvements, accomplishments of management and employes.

(5) Have Key Officers and Directors Attend meetings of stockholders as a regular practice. They can answer questions, explain technical, legal and accounting matters as well as meet shareholders and establish more personal basis for conducting company's business.

(6) Introduce New Officers, Directors, Auditors to stockholders at annual meeting, in thumb-nail sketches and photographs in annual reports, interim earnings statements, company magazines, dividend envelope stuffers, etc., so stockholders will know key men in organization and have confidence in them.

(7) Report on Annual Meeting to stockholders by letter or company publication so investors will be informed on all important developments and receive same facts presented those who attended. This not only gives stockholders who turned over proxies to management courteous reciprocation for ballots, but also minimizes chance dissident stockholders will accuse executives of withholding valuable information from those who cannot afford time or money needed to attend.

Proxies

(1) Letter Soliciting Security Owners Proxies must be accompanied by proxy statement reporting, among other things, the cumulative compensation received from the company, its subsidiaries and affiliates by each of its highest-paid officers and all of its directors; what securities of the company, its subsidiaries, and its affiliates are owned by them directly or beneficially; the text and explanation of purposes of any proposals to be voted on. It is advisable to avoid legal, technical or accounting language if possible.

(2) Personal Letter of Thanks for Proxy should be mailed each stockholder by the chairman or president upon receipt of proxy. Letter expresses management's disappointment that the stockholder cannot be present at meeting but invites him, if possible, to attend and vote his shares in person. It also explains that proxy is indication stockholder has confidence in both the officers and directors who manage the company.

Direct Mail To Security Owners

(1) Report Earnings Periodically to stockholders throughout the year, with appropriate remarks by president. Unaudited interim reports can be made quarterly, including balance sheets showing the condition of company at close of the period.

(2) Dividend Stuffers, folders and letters, should be mailed with dividend checks to stockholders. Enclosure may be: statement of labor policy, explanation of opposition to proposed legislation, expansion plans, announcement of introduction of new product, new government contracts, addresses or articles by executives or technical men, samples of direct mail pieces or reprints of advertisements.

(3) Stockholders Should Receive Prompt, Personal Letters in response to questions, complaints, suggestions, comments, requests for information and thanks. Replies are written by the appropriate representative of company: chairman, president, secretary, treasurer, attorney, assistant to president, controller. They establish firm basis for good stockholder relations and show management conscientiously strives to do everything possible to keep investors advised of developments.

(4) Special Reports from President Promptly Tell stockholders effect on company of unusual developments: acquisition or disposal of properties, government contracts, new sales contracts, labor union contracts, new regulations by state and federal agencies or important decisions on litigation.

(5) Copies of Important Articles or Addresses by officers or other important members of executive staff, researchers, etc. are mailed to security owners so investors will be informed promptly on management position on various matters, or to show stockholders how company has led industry. This is done to build pride and confidence of stockholders in your company, its role in nation's life and industry.

(6) Company Publications Help Stockholders Learn more about plants, products, management policies, manufacturing processes, research and development work, employe training program, personnel relations, procurement methods and purchasing problems, warehousing and distribution system, merchandising methods, health and accident prevention program, pension and insurance plan, employe recruitment program and relations with public, vocational, technical and business schools. Suitable material includes: internal and external publications, technical and sales bulletins, copies of advertisements.

(7) Mail Security Owners Special Invitations to: try new products and services, visit exhibits, witness demonstrations, participate in celebrating important anniversaries in the history of the company. Send personal credit cards, letter of introduction, list of dealers handling company's products, so stockholder will have greater interest and enthusiasm in company's business.

DAVID SKYLAR vice president, Griswold-Eshleman Co., has had long experience in advertising and public relations. Having taught advertising and marketing, in addition to his duties with Cleveland's largest advertising agency, he has a well rounded background to discuss the subject of Financial Public Relations.

(8) Booklets Presenting Information About Stock and giving a short history of both the company and its industry are effective in making investors interested in your business. Products and services, their uses and benefits are described. Booklet contains record of earnings, dividend payments; traces growth. A copy is mailed to each new stockholder as soon as his name is entered on books, other copies are sent to investment counsels, securities analysts, bankers, securities brokerage houses, underwriters, insurance companies' investment departments.

Miscellaneous Communications With Security Owners

(1) Letters of Welcome Should Be Mailed Stockholders by presidents as soon as investors' names are registered in records, with a copy of latest annual report, booklet giving history of company and its securities and other appropriate literature.

(2) Letter of Regret that investor no longer owns stock in the company to be written by the presidents when records show shares have been sold. Investors may be asked why they sold; loss of confidence in the officers or management, dissatisfaction or grievances, poor earnings prospects, dividend policy, etc. Replies may guide management in strengthening its relations with stockholders and public.

Financial and Investment Community Relations

As mentioned before, Financial Public Relations means strengthening of the ties of the company with two primary groups; the security owner and the financial and investing community. Communications with the financial and investing community should be started at the same time as communications to the shareholder. This can be done as follows:

Financial Publicity: The developments, progress and status of any company whose stock is in the hands of the public *is news*. Getting your fair share of this material published by newspapers, business magazines, news services, radio-TV is a difficult and time consuming job. It takes know-how to get your story into print at the time you want it in the way you want it.

The objectives of a financial publicity program may be stated this way:

(1) To release and get published information that will be of some benefit to the company.

(2) To get wider recognition of the company, its name, products and policies.

(3) To improve the company's standing with the financial public.

It takes specialized skills and knowledge to handle financial publicity and get the highly desirable results.

What may seem as private or un-

GIIIID

STROMBERG-CARLSON® REPEATERS:

made by and for telephone men

Let's face facts: when you have transmission problems, you can't afford to settle for less than the finest products and the most qualified technical service in the industry.

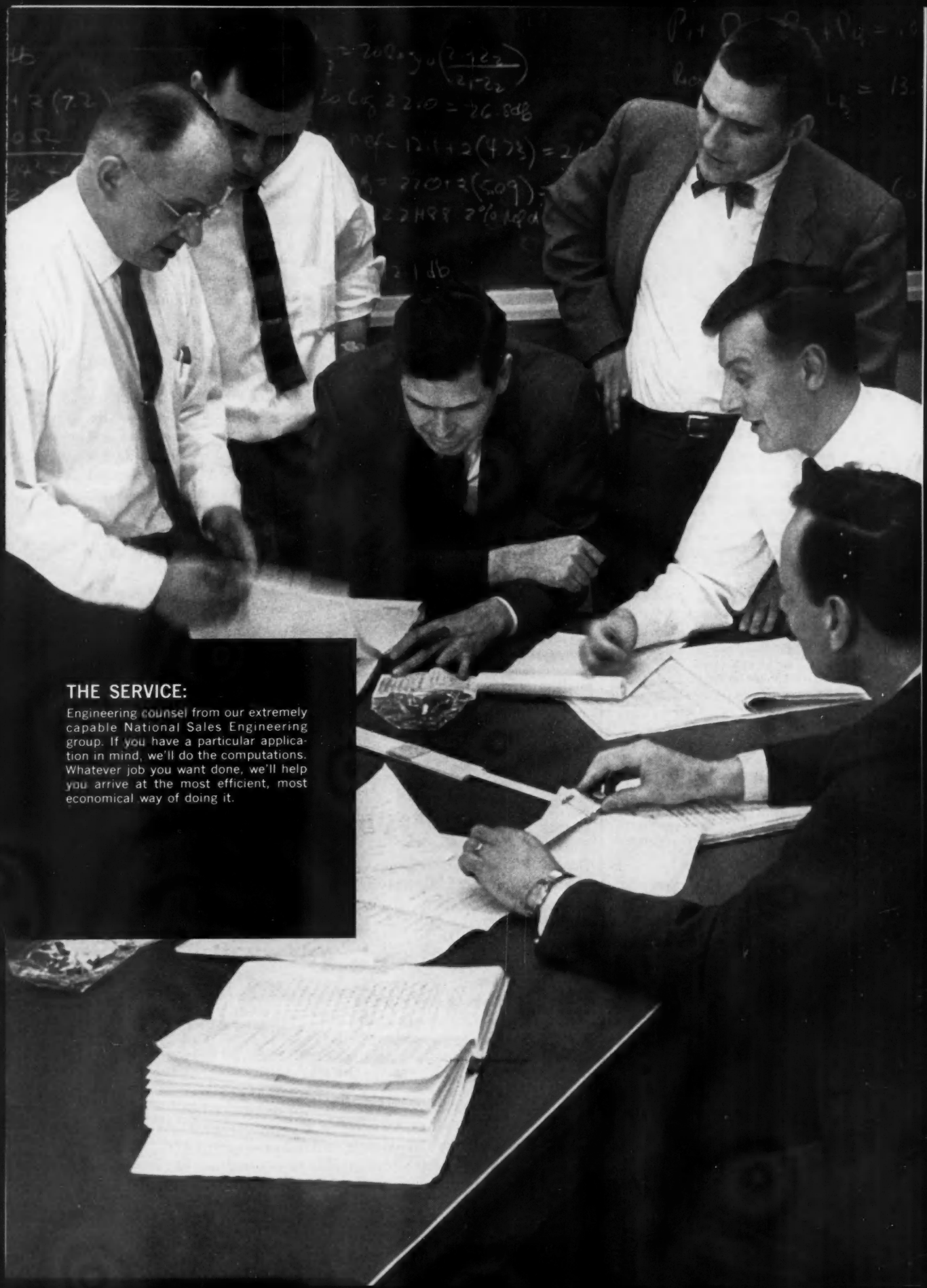
To get the products and services that will best solve your transmission problems, it pays to do business with the largest, most capable supplier of repeaters in the Independent market. Your Stromberg-Carlson representative is ready to show you exactly how to get more for your dollar. In Atlanta, call: 875-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

GENERAL DYNAMICS | ELECTRONICS

THE PRODUCTS:

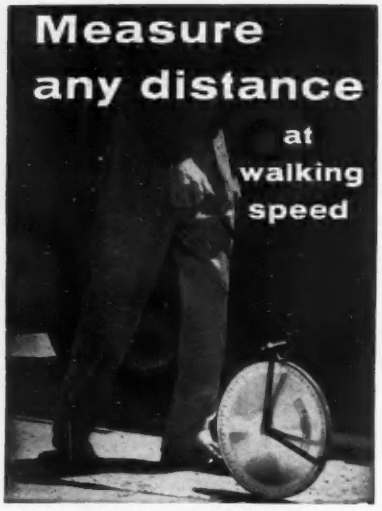
NEW "571" hybrid-type repeaters with transistorized amplifiers. No AC power supply needed; and you get the reliability and long life of transistorized design. On circuits with high transmission loss you get the gain you need to achieve toll standards. Initial cost is low. Centralized maintenance means additional economy in man-hours saved.

100% transistorized "541" negative impedance repeaters assure optimum transmission, at minimum cost, on trunks and long lines. On existing installations you can often meet DDD requirements without replacing cable. On new installations you can gain extra savings by using smaller gauge cable or wire.



THE SERVICE:

Engineering counsel from our extremely capable National Sales Engineering group. If you have a particular application in mind, we'll do the computations. Whatever job you want done, we'll help you arrive at the most efficient, most economical way of doing it.



records 100,000 ft.
automatically!

It's So Easy to measure with a Rolatape ... and you save time on every estimating job... no tapes to wind, no helper is required. You get precision-accurate measurements every time.

Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Write for information and name of local dealer today!

Rolatape, Inc., 1741 14th St., Santa Monica 2, California

Rolatape
Measuring Wheels

important events can be and are excellent possibilities. Taking advantage of many of them can greatly strengthen the overall financial publicity program and increase its value many times over.

Here are suitable subjects for Financial publicity:

Anniversaries of company milestones.
Anniversaries of senior officers.
New achievements in products, sales, research.
Individuals in organization making outstanding contributions.
Awards to company and its personnel.
Research findings that may have great possibilities in the future.
New manufacturing process and techniques.
New raw materials, their origin and new uses.
Improvements in operating efficiencies.
Patents acquired.
Product and service improvement.
Important speeches by company officials.
Visits by famous people.
Advancements by key people.
Economic analysis and forecasts.
Successful bids and awards.
Product merit awards.
Volume of sales.
Unusual shipments.
Financial success stories.
Creation of new promotion materials, trademarks, etc.
Plant expansion, purchase of new facilities.
New contracts.
Annual report and new year forecast.
Dividend declarations.
Interim earnings
Redemption notices.
Recapitalization.
Refinancing and reorganization plans.
Election of directors.
Contract negotiations.

Proper Planning All-Important

MOST poor financial publicity programs are ineffective because they are poorly planned. They are sporadic, rather than regular and continuous, they omit things which should be included in the program, and they are marked by poor writing, poor pictures, poor drawings and poor handling. It is not difficult to develop a good publicity program, but it takes conscientious effort, good hard work.

Other Activities

Invite Newsmen to Events such as plant dedications, demonstrations of new products or processes, hearings on legal and rate cases before commissions and the courts, trade show exhibits, conventions and fairs in which company is directly involved, or in which it is actively participating. In this way reporters will be provided suitable material for accurate, newsworthy stories and photographs which will be read and seen by a large number of stockholders and investors in widely circulated or influential publications.

Distribute Shareholder Material to security analysts, brokerage houses, mutual funds, banks and trust companies, government officials and financial publications.

Mail Special News Letters to Brokers, others who influence the purchase of securities, so they will realize the significance of information being released to newspapers and magazines. These letters briefly tell interesting facts about company, have additional impact because of relationship to current news of its plans and operations. They help both customers' men and securities analysts to advise investors.

Have President Address Securities Analysts' meetings, to discuss company's business and prospects, expansion plans, financial plans and related matters. Talk may be made "Off the Record" or without reservation, but by only the most reliable, responsible and best-informed executive available. Meeting may be held in connection with a tour of the plant.

Build Prestige and position of company officials by planning speaking engagements, direction of editorial attention, participation in community activities.

In Summary

BUILDING and holding shareholders goodwill, or attracting new stock holders is basically the same as selling a product.

The product to be sold is the company itself. And this requires as much, if not more, planned, well directed effort as selling the company's products. Financial Public Relations is a highly important endeavor, separate and apart from the ordinary public relations and advertising programs. — *David Skylar.*

So Simple

It's a wonder nobody thought of it sooner

This is Shure-Set,® the tool that makes permanent attachments to concrete or building block with less than ten taps of a hammer. And it's about as easy to use as the hammer. Special steel fasteners are inserted at one end, your hammer strikes the other. And that's all, the fastening is made. (No powder charges are necessary.)

There's no drilling or plugging to do. And none of the problems associated with masonry nails. Shure-Set's anvil, an easy target to hit, concentrates the force of your hammer blow and applies it directly to the head of the fastener inside Shure-Set's precision bore. That way the hammer never skews off and the fastener never wavers. (Your fingers are well protected, too.)

And the austempered steel fasteners (nail-like drive pins and threaded studs) can't bend or break or fly around the room; they have the ideal metallurgical characteristics for efficiently penetrating hard construction materials.

Shure-Set will pay for itself by saving time. Probably on the very first job. It also saves a lot of (put your own price on it) perspiration. It's made by Ramset Fastening System. Write for more information, or call your local Ramset dealer. He's listed under "Tools" in The Yellow Pages.

Ramset® Fastening System

WINCHESTER-WESTERN DIVISION **Olin** 303-E Winchester Ave., New Haven 4, Conn.

A TELEPHONE ENGINEER AND MANAGEMENT

REPORT

ON EQUIPMENT

Turbine Generators Face New TIF Requirements

NEW TELEPHONE INFLUENCE FACTOR

Progress in the art of telephone communication, broadening the sensitivity range of the equipment, has laid down a challenge to the manufacturers of turbine-generators. By fully utilizing advances in generator design techniques, the increased weightings in the region of turbine generator slot frequencies are being met with a wide margin of safety.

By L. T. ROSENBERG*

NEW TIF (telephone influence factor) weightings were recently adopted by the Joint Sub-committee on Development and Research of the Edison Electric Institute and Bell Telephone System to take into account the improved frequency response of modern telephone equipment.

The presence of harmonic voltages or currents in power systems was recognized as a source of objectionable noise in exposed telephone circuits well over 40 years ago. Since then, in parallel with advances in generator design techniques, considerable improvement has been made in telephone equipment as well as in the art of transmission of voice messages. Developments in power system transmission and distribution have also aided in this progress.

The voltage wave of today's large turbine-generators approaches a sine wave, perhaps more closely than that of any other type of rotating machine. Some of the features that contribute to this development are inherent because of physical considerations. Others are purposely introduced even at considerable expense, to provide as nearly perfect a wave form as possible.

Experimental research beginning in 1914, lead to the adoption of the first standards intended to control noise in telephone circuits introduced from power lines. The studies disclosed wide differences in the potential disturbing properties of different frequency harmonics. The characteristics of the human ear as well as those of the telephone equipment then in use, were taken into account in these early experiments. The results of these tests were expressed as a curve called the "message weighting curve" giving the relative disturbing effect of the various harmonics in the telephone circuit as a function of their frequencies.

TIF Curve Developed

IT WAS recognized that the inductive coupling between power and communication circuits is also dependent upon frequency. Assuming that the coupling is directly proportional to the frequency, a second curve, known as the "telephone interference factor weighting curve," was derived and published in 1919[1] expressing the potential disturbing influence of a given voltage or current on the power system as a function of its frequency. As shown in *Figure One*, Curve A, there is a peak at 1100 cps, resulting from the nature of the telephone equipment at that time.

With the TIF weighting curve as a starting point, it was then possible to calculate the TIF of a complete voltage wave, defined as the ratio of the square root of the sum of the squares of the products of the individual harmonic voltages by their respective weighting factors, divided by the rms value of the voltage wave. The same definition may be applied to a current wave.

This definition and the 1919 curve were generally adopted by both utilities and machinery manufacturers

*Thermal Power Department, Allis Chalmers, Mfg. Co.

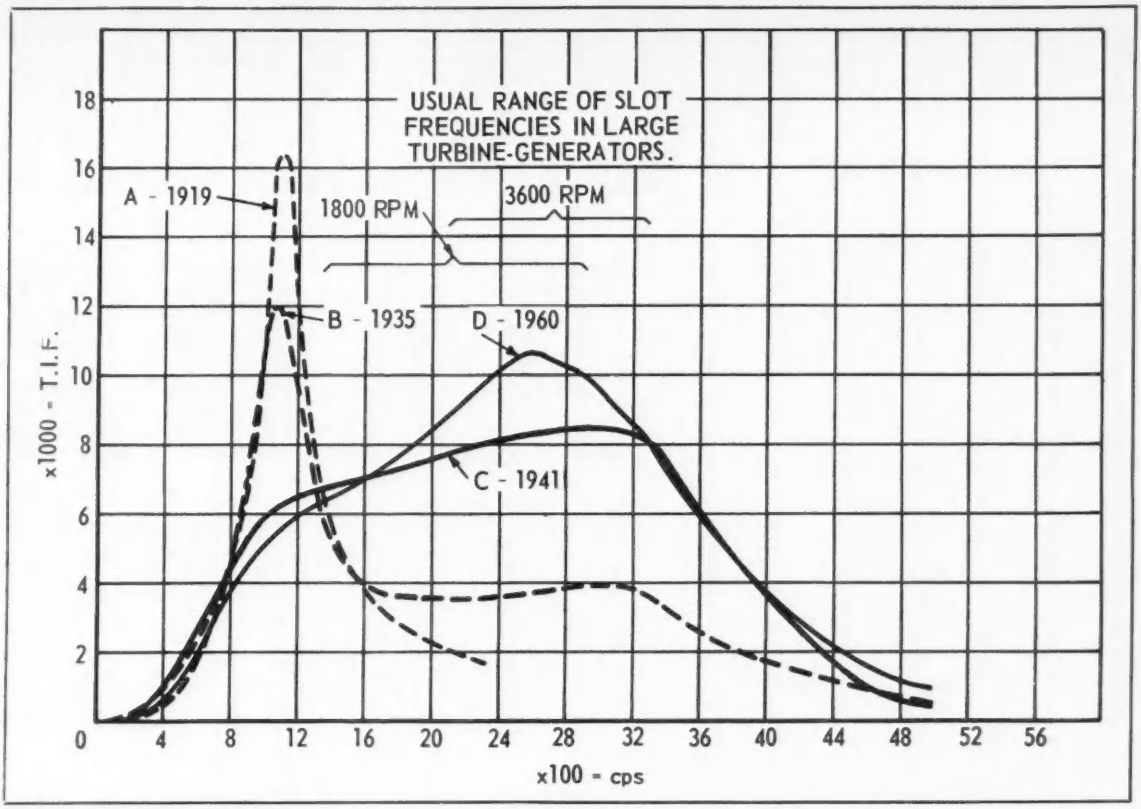


FIGURE ONE: — TIF weighting curves have changed through the years as telephone equipment sensitivity has been broadened in frequency. Peaks of early curves were eliminated.

as a convenient yard stick in the appraisal of any voltage or current wave with respect to its potential influence upon a telephone circuit. Acceptable telephone interference factors were then established for various types and sizes of electrical machines based on performance records in conjunction with TIF tests compiled on a great many machines. These acceptable values of TIF were later incorporated in Rotating Machine Standards, ASA C50.

In 1935, based upon further progress in telephone equipment a new curve, B, was proposed[2] extending the frequency range to 5,000 cps. A new term, "telephone influence factor," was also proposed with this new curve as a distinguished means from the earlier term. The abbreviation would still remain TIF, and the word "influence" was considered more appropriate than "interference." Although the 1935 curve was adopted soon afterward by the telephone engineers and some utilities, it was not until 1955 that it was officially included in the ASA Standard for Rotating Machines ASA C50.1.

New Curve Adopted

IN THE meantime, further experiments and more progress in telephone equipment toward improved uniformity of response to all frequencies gave rise to further refinements in the message weighting curve, placing increased emphasis on the higher frequencies and reducing the weightings of the lower. These investigations led to curve C, which was based on a message weighting curve developed in 1941 for the so-called "302 series" telephone hand set. The sharp peak near 1100 cps was substantially overcome.

Still more recently, the new "500 type" telephone set was introduced and is rapidly replacing earlier equipment. A working group on TIF Revision was appointed by the Joint Subcommittee on Development and Research of the Edison Electric Institute and the Bell Telephone System to bring the TIF standards up to date. Tests on the 500 series set, carried out by the Bell Telephone Laboratories, led to a new message weighting curve, and the corresponding TIF weighting curve, D. This curve, which was recently approved for adoption by the Joint Subcommittee, is now known as the 1960 TIF weighting curve. These developments are fully described in a recent AIEE paper by Messrs. W. C. Ball and C. K. Poarch.[3]

The 1960 weighting curve assigns higher TIF values to frequencies above 1300 cps than the 1935 curve now recognized in the ASA standards. Because of its inherent design requirements, the high speed turbine generator is more likely to have slot frequency harmonics above this frequency than other types of alternators. The range

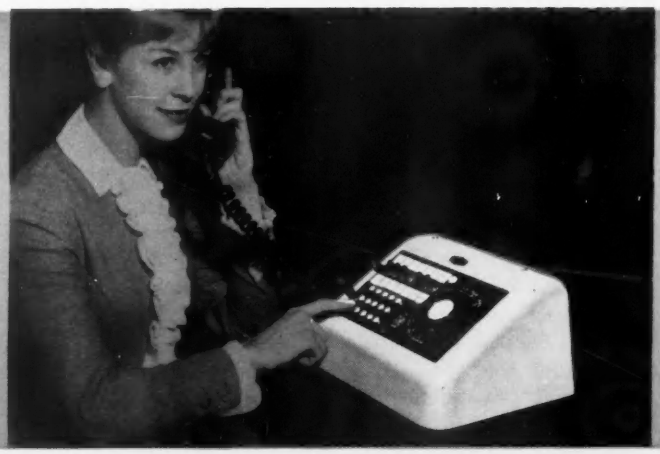
[1] *See bibliography.*
[2] *See bibliography.*
[3] *See bibliography*

TYPE 40A and 80A PABX

AE gives you quick delivery on Type 40A and 80A PABX. These boards are designed to serve your business customers who need fast, flexible communications. For complete details on these systems, see your AE representative. He can also furnish valuable sales aids to help you promote PABX in your area. To contact him, just write Automatic Electric Sales Corporation, Northlake, Illinois.

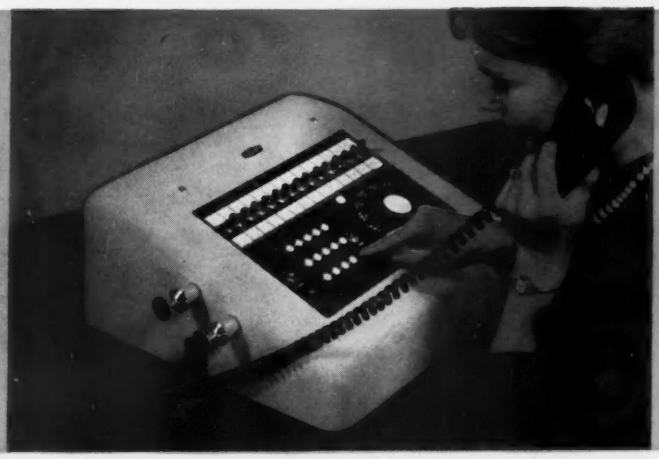
TYPE 40A PABX

A complete communications system for up to 40 lines. Handles six local inside calls and 10 outside city calls—using standard phones. Calls are transferred without help from the attendant. Compact attendant cabinet (shown here). 13 optional services including Busy Lamp Field, Code Call, Executive Right-of-Way and Direct Line Unit.



TYPE 80A PABX

A new system which provides up to 80 lines. Handles 12 local inside calls and 20 outside city calls—using standard phones. Calls are transferred without help from the attendant. Modern keyset turret (shown here) keeps incoming traffic moving swiftly. 13 optional services including Busy Lamp Field, Code Call and Direct Line Unit.



These PABX systems are manufactured by Leich Electric Co.

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GENERAL SYSTEM

of slot frequencies in turbine-generators are indicated in *Figure One*. Unless additional precautions are taken to offset the increased weightings of these high harmonics, the telephone influence factors of turbine-generators may in some cases increase when computed on the basis of the 1960 curve. The table below shows the comparison of TIF values by both the 1935 and 1960 weightings on four typical turbine-generators. Even though an appreciable increase does occur on the 9375-kva machine, there still remains a generous margin below the acceptable ASA-TIF values given in the last two columns.

Comparison of TIF Values of Turbine-Generators by 1935 and 1960 Weighting Curves

		1935 TIF		1960 TIF		ASA Std. (1935 Curve)	
Kva Rating	Voltage	Balanced*	Residual**	Balanced*	Residual**	Balanced*	Residual**
265,000	20,000	3.39	5.60	3.88	4.60	50	30
206,470	18,000	3.70	7.00	3.93	5.48	50	30
32,000	13,800	11.30	4.30	10.10	3.80	50	30
9,375	13,800	17.30	14.20	33.70	19.10	60	30

*Harmonics other than triples
**Triple harmonics only

Harmonics Stem from Geometry

THE turbine-generator has three important advantages over the salient pole machine insofar as its voltage wave form is concerned. It has a large air gap, a cylindrical rotor, and a distributed rotor winding. Although these factors account for the relatively low TIF value of turbine-generators, they cannot be said to produce a perfect sine wave of voltage. Economic and engineering considerations prevent sinusoidal distribution of the rotor slots. As a result, the no-load flux density wave in the air gap is approximately trapezoidal with steps in the trapezoid resulting from the finite number of slots. Such a wave is composed of a fundamental plus odd harmonics.

The higher frequency harmonics, which have a direct bearing on the 1960 TIF's in turbine-generators are due mainly to the armature slots. As the rotor pole center moves from a stator slot to a stator tooth, any variation in air gap permeance will cause pulsation in the flux at a frequency equal to the number of slots traversed per second by a fixed point to the rotor. To satisfy symmetry requirements, two odd multiples of the fundamental frequency appear in the voltage wave. The order of these harmonics is equal to the number of slots per pair of poles plus or minus one.

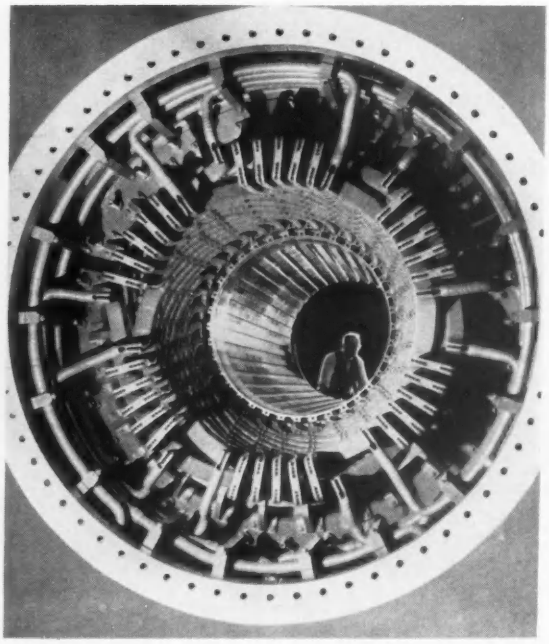

FIGURE TWO: — Slot arrangement and skew of 3600-rpm, 2-pole, 150 mw, fully-supercharged, hydrogen-cooled turbine-generator was designed with TIF weighting curve in mind.

Saturation may also create harmonics in the wave form of a turbine-generator. The highest densities in the magnetic circuit usually occur at the tips of the stator teeth and the roots of the rotor poles and adjoining teeth. As these restricted areas saturate, the center portion of the flux density wave is further depressed. The presence of damper windings, balance screw holes and ventilating slots are also potential sources of harmonics in the open circuit voltage wave.

The limiting values of the telephone influence factor of rotating machines given in the ASA standards apply to the open circuit voltage wave. The addition of load current will materially affect the air gap flux distribution as the stator mmf wave is superimposed upon the rotor mmf wave. The effect of load on the harmonics in salient pole machines is treated in a recent paper by Messrs. David Ginsberg and Alois Jokl.[4] In practice, however, certain types of load may introduce appreciable harmonics of their own or even suppress some of those of the generator. Consequently, TIF measured under loaded conditions is hardly a reliable criterion of the generator wave form.

Design Features That Reduce TIF

THE voltage wave generated in a single, full pitch coil in the armature will correspond very closely to the flux density wave in the air gap. Two adjacent coils spaced a specific number of electrical degrees apart, when connected in series will generate the vector sum of the voltages in each coil. The fundamental voltages will be displaced by the same number of electrical degrees and their vector sum will be nearly equal to their algebraic sum. The kth harmonic voltages will be dis-

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placed by k times the number of electrical degrees, and their vector sum will generally be much smaller than their algebraic sum. (The term k represents the order of the harmonic to be calculated, thus 1, 3, 5, 7, etc.)

In a typical 3-phase winding shown in *Figure Two*, there are several slots in a phase group, spanning a total of 60 electrical degrees. For this arrangement, the belt differential factor, by which the sum of the fundamental voltages is multiplied, is 0.955. The sum of the third-harmonic voltages on the other hand, is multiplied by a factor of 0.637 and that of the seventh harmonic by 0.136. The belt differential factors do not apply to harmonics caused by flux of fundamental space distribution, pulsating or rotating at k times the fundamental frequency.

As stated above, the slot frequency harmonics of a turbine-generator are the most likely to raise the TIF as determined on the basis of the 1960 weighting curve. The most direct solution is to eliminate the pulsations in permeance by careful attention to the design of slotting of both rotor and stator. Here again such considerations as efficiency, temperature rise, tooling, drawings, and manufacturing tolerances, often dictate optimum proportions that deviate from the ideal slotting arrangement. In such cases, an equally effective method of reducing slot harmonics consists of providing a helical skew in the stator slots. This is accomplished by skewing the dovetails as they are bolted to the inner periphery of the stator yoke before the core is stacked.

The slot harmonics are virtually eliminated by skewing the stator core one slot pitch from one end of the stator to the other. The helical skew also serves to reduce space harmonics present in the flux distribution wave. Even though the full pitch of skew complicates the drawings, tools, and assembly processes, nevertheless, the wave shape benefits derived from it often justify the added manufacturing cost. Stator cores of many large turbine-generators are skewed.

The use of short pitch stator coils is another effective means for controlling harmonics. In generators transmitting their power at their own terminal voltage with their neutrals grounded, the triple frequency harmonics were sometimes found to induce telephone noise. The 2/3 pitch stator coil, which elminates all triple harmonics, has ben widely used to guard against difficulties from this source.

With most modern large generators employing the unit system, no power is transmitted at generator voltage. Moreover, the neutral is usually grounded through a distribution transformer with resistor loaded secondary which behaves as a very high resistance ground connection. The triple frequency harmonics are less likely to be troublesome than some of the non-triple harmonics.

The 2/3-pitch stator coil has no effect upon the percentage of the balanced harmonics, since they are reduced by the same pitch reduction factor as the fundamental. Optimum pitch from the standpoint of generator efficiency and capacity is usually in the neighborhood of 83 percent of a pole pitch. The triples are reduced by a factor of about 0.70 and certain undesirable non-triples such as fifth and seventh harmonics are effectively minimized.

To permit optimum pitch, the triple harmonics in the flux density wave can be suppressed by making the pole center between rotor coils equal to 1/3 of the pole pitch. This arrangement also permits economical use of rotor space if the magnetic and conductor materials are properly proportioned. In practice, owing to the larger effective gap in the region of the rotor slots than in the pole region, the pole is made slightly wider than 1/3 of the pole pitch, to reduce the triple harmonics effectively.

Another improvement in the flux density wave form, arises from the use of one or two pairs of shallow slots adjacent to the pole center. These shallow slots have fewer turns than their deeper neighbors, so that a more nearly sinusoidal magnetomotive force wave is produced.

Developments Foster Better Communication

PROGRESS in the art of telephone communication, broadening the sensitivity range of the equipment, has laid down a challenge to the manufacturers of turbine-generators. By fully utilizing advances in generator design techniques, the increased weightings in the region of turbine-generator slot frequencies are being met with a wide margin of safety, as indicated in the table on TIF values of turbo generators.

Progress in power line transposition and greatly increased use of generators tied directly to their own transformers have appreciably reduced the inductive influence of the power system on telephone lines. Moreover advances in longitudinal balance and shielding of modern telephone circuits have minimized their susceptiveness to outside disturbances.

References

(1) "Review of the Subcommittee on Wave Shape Standards of The Standards Committee," H. S. Osborne, *AIEE Transactions*, Vol. 38, 1919.

(2) "Measurement of Telephone Noise and Power Wave Shape," J. M. Barstowe, P. W. Blye and H. E. Kent, *Electrical Engineering*, Dec., 1935.

(3) "Telephone Influence Factor and Its Measurement," W. C. Ball and C. K. Poarch, AIEE Transactions, 60-1195., (*Communications and Electronics*, Page 659, January, 1961).

(4) "Voltage Harmonics of Salient Pole Generators Under Balanced 3 Phase Loads — I," David Ginsberg and Alois L. Jokl, *AIEE Transactions*, Feb., 1960.

(5) "Telephone Interference and Alternator Wave Shape," L. T. Rosenberg, Allis-Chalmers *Electrical Review*, June 1943.

(6) "Telephone Influence Factor in Synchronous Machines," J. L. Oscarson and I. C. Benson, *AIEE Transactions*, Vol. 70, 1951.

[4] *See bibliography.*

PLANT ENGINEERING NOTES

By JOHN S. REED
Technical Editor, TELEPHONE ENGINEER & MANAGEMENT

New Ground Rod Connection Method

NEW IDEAS AT WORK

New welding method used for connecting ground lead to ground rod . . . Small capacitors of proper values at correct points in loaded cable section aid building-out projects . . . New transistorized multiplexing equipment is designed to channel as many as 600 separate conversations.

New Permanent Connection Method for Ground Rods

WHEN connections are to be made to a driven rod for protection purposes, the usual method is to attach the ground wire to the ground rod with a clamp designed for this purpose. However, when it is necessary to connect a ground lead from a central office ground bus, the connection must be soldered to assure a permanent joint.

A new welding method is said to provide a more reliable connection than soldering. The idea is not new as it involves the use of a thermit welding process, but its application to ground rods is recent. As shown in *Figure One*, a simple kit consisting of a ceramic mold, powder cartridge, metal disk, wrap seal, and flared sleeve is employed to make a solid metal connection which is claimed will never corrode or loosen.

The illustration shows how the mold is assembled on the ground rod and ground lead and igniting the thermit powder to weld the cable to the end of the ground rod. The ceramic mold is disposable and may be removed and discarded or else left in place on the rod.

Building-Out Capacitors

BUILDING-OUT capacitors are employed to correct transmission losses due to spacing irregularities of loading coils on loaded cable. Spacing irregularities occur because it is not always feasible to place loading coils at exactly the specified spacings.

For example, H-88 type loading coils must be spaced at 6000 foot or 300 foot intervals (at end sections). The limits of spacing irregularities is plus or minus 500 feet. A loading section that is too short requires the addition of a shunt capacitor. If the

Please turn to page 56

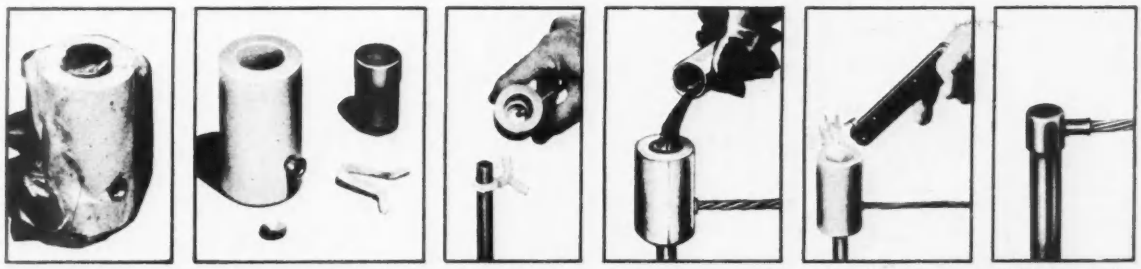
Cadweld unit
All parts packed in Mold
Twist wrap seal on rod, insert cable in sleeve
Dump Cadweld powder in mold
Fire with flint gun
Finished Cadweld connection

FIG. ONE: — Showing method of using Cadwell "One-Shot" mold for connecting ground lead to ground rod. (Erico Products, Inc.)

section is too long, it is necessary to establish an extra loading point and then build out the remaining short section to the proper value with a shunt capacitor.

In the past, capacitance building out was accomplished by the use of stub cables, which are 6 to 10 foot lengths of 24-gauge cable. A number of stub pairs were bridged across each of the loaded pairs to be built out. A capacitance bridge was required to measure the capacitance of the stub pairs to make sure that proper values were used.

Cable building-out can be more easily accomplished by connecting small capacitors of the proper values at the correct points in the loaded sections. The proper capacitance value for the loaded pairs in a section is obtained by multiplying the cable capacitance per 1000 feet by the difference between the standard spacing and the actual spacing of the loading coils in the section. (The cable capacitance per 1000 feet is obtained by dividing the cable capacitance per mile by 5.28.)

Figure Two illustrates a typical building-out capacitor which is attached to the cable pair by means of crimp type sleeves. These capacitors can be spliced and assembled inside a lead sleeve with the capacitor leads and splices insulated with cotton sleeving.

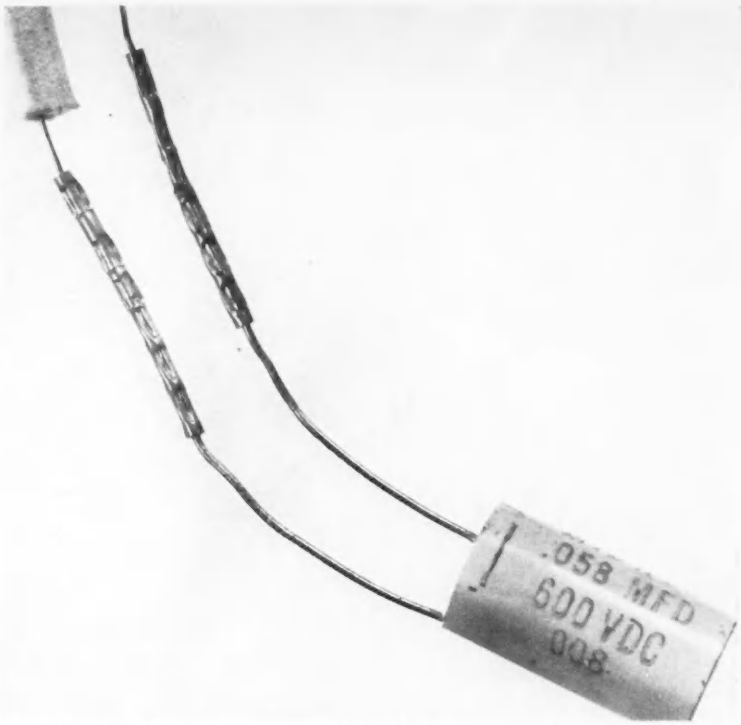

FIG. TWO: — Illustrating a typical building-out capacitor. (Midwec Corp.)

For jobs requiring a large number of capacitors, in a number of loading sections, cast-resin building-out capacitor stubs (*Figure Three*) are available. This is a complete unit ready to splice into the cable which eliminates the need for fabricating or testing the capacitors in the field. Building-out capacitor stubs are made to the customer's specifications.

FIG. THREE: — Illustrating a typical building-out capacitor stub.

Transistorized Carrier System For 12 to 600 Channels

MULTIPLEXING equipment is an important part of the microwave system since it provides a number of channels for telephone conversations to be carried in a microwave link.

The Lynch B-910 multiplexing equipment is designed to channel as many as 600 separate conversations or other types of information. At the transmitting end, it translates all channels into higher frequencies allocations thereby providing, to the microwave transmitter, a single modulating signal which contains simultaneously the information for all the voice channels. At the receiving end

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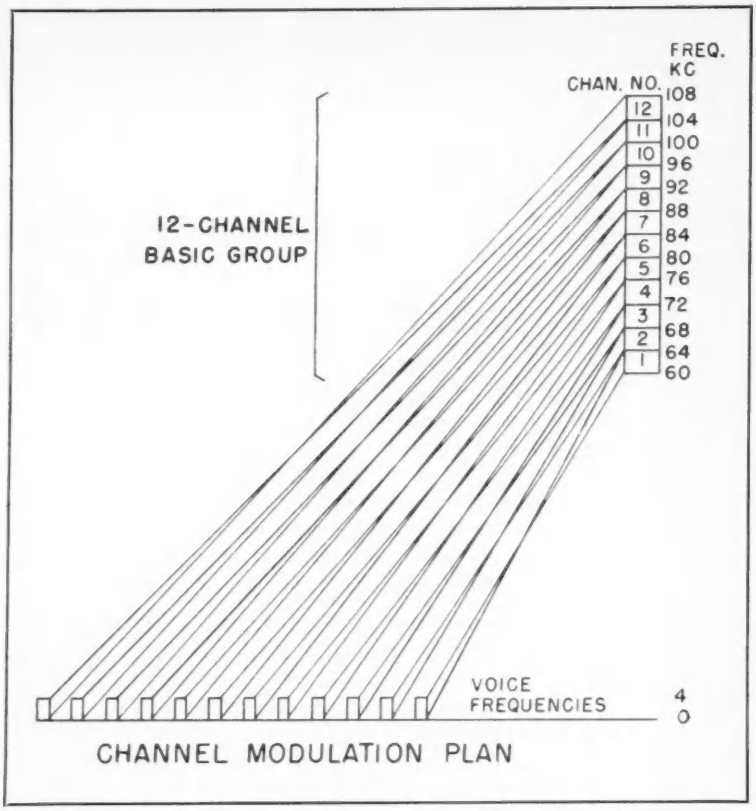

FIGURE FIVE: — Channel modulation plan. This is the basic 12-channel group of the Lynch B910 system.

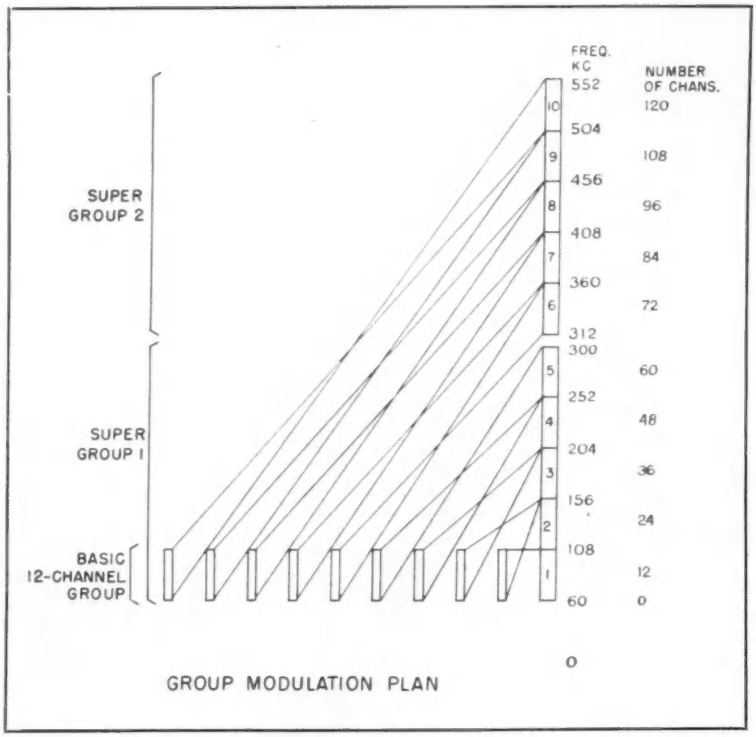

FIGURE SIX: — Group modulation plan. Each group is re-positioned by Group Modems to occupy an approximate 48 kc segment.

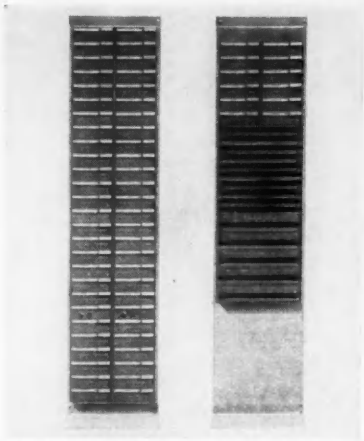

FIGURE FOUR: — The new Lynch B910 60-channel fully transistorized multiplexing system is shown in two seven foot racks. Right hand rack shows network and filter panels, also individual hybrid panels for each group of 12 channels as well as independent jack panels for each 12 channel group. Left rack includes power supply for 60-channel bank and standby power supply.

of the microwave link, the system translates the transmitted intelligence from the microwave carrier into the original frequency range and proper channel.

The Lynch B-910 system illustrated in *Figure Four* is a fully transistorized carrier system which is said to have high operating flexibility and economy for microwave multiplexing applications. It is also expandable to cable and wire operations. It is designed to connect into other carrier systems operating within a corresponding range.

The individual channels, which are four kilocycles wide use single-sideband suppressed carrier transmission and are individually stackable to the group maximum of 12 channels. Beyond the basic group of 12 channels the system may be expanded progressively by grouped modulation meth-

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ods up to a maximum of 600 channels.

This system can be installed economically even when initial requirements are less than 12 channels. It is said to be economically practical for small and large users alike. Expansion beyond the first group can be accomplished by adding another group of 12 channels, then up to 9 additional groups or, on a similar group basis, to an ultimate high-density 600-channel system.

Each channel has the same voice frequency range of from 300 to 3400 cycles, a typical speech range which will also accommodate telegraph or data transmission information. For data applications, omission of the signaling equipment will extend the voice frequency range. The basic 12-channel group is generated in a single modulation step instead of the double-step modulation procedure in common use. This short-cut procedure permits a 12-channel system to be placed directly on a microwave baseband without need for intermediate active group equipment.

Each channel has its own carrier oscillator which serves to shift the basic 4-kilocycle channel to a higher frequency. Thus Channel "1" frequency is shifted to a band from 60 to 64 kc: Channel "2" frequency is shifted to a band from 64 to 68 kc, etc. The procedure is repeated for successive channels until the limit of 12 channels is reached, with the 12 stacked 4-kc channels occupying a frequency segment 48 kc wide, extending from 60 to 108 kilocycles.

The system can be expanded to 12 channels by providing a second channel grouping extending an additional 48 kilocycles in a band from 108 to 156 kilocycles. The next economical channel additions following the first basic 12-channel group are one or more groups of twelve channels, each group being repositioned by Group Modems to occupy an approximate 48 kc segment, up to 300 kilocycles.

More channel additions are possible beyond 60 channels by adding more 12-channel groups in a 48-kc band derived by Group Modems.

Figures Five to Seven illustrate the three modulation plans which show how the expansion is accomplished for each type of modulation plan.

"This discovery will sure change the record!"

Direct modulation to the second supergroup range from 312 to 552 kc provides for expansion to 120 channels before any common supergroup equipment is required. Expansion of the system to its ultimate 600-channel capability (ten 60-channel supergroups) is accomplished by repositioning the supergroups in accordance with the CITT (International Telephone and Telegraph Consultative Committee) modulation plan to a segment about 2400 kc wide with a top frequency of 2540 kcs.

The claimed advantages of the new fully transistorized 600 channel system are summarized below:

(1) The system is expandible. It may be economically started with only one channel and built up to 600 channels without penalizing the small user.

(2) A new level of reliability has been obtained. Thus up to 12 channels are possible without need for common equipment and up to 120 channels with no equipment common to more than 12 channels.

(3) Individual channel units are smaller in size, enabling more units to be mounted within a given rack mounting area.

(4) Because of the use of transistors, less heat is generated with a lower accumulated heat rise or hot spots, reducing the ventilating or air conditioning costs.

(5) Operating voltages are lower with smaller power requirements with consequently lower maintenance and replacement costs of storage batteries.

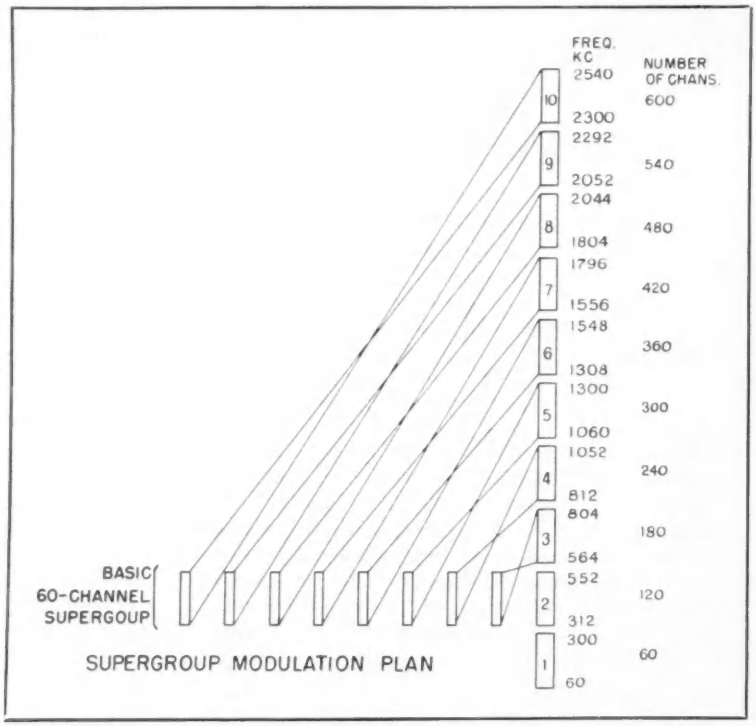

FIGURE SEVEN: — Supergroup modulation plan — Ten 60-channel supergroups are repositioned in accordance with the CCITT modulation plan to a segment about 2400 kc wide with maximum frequency of 2540 kcs.

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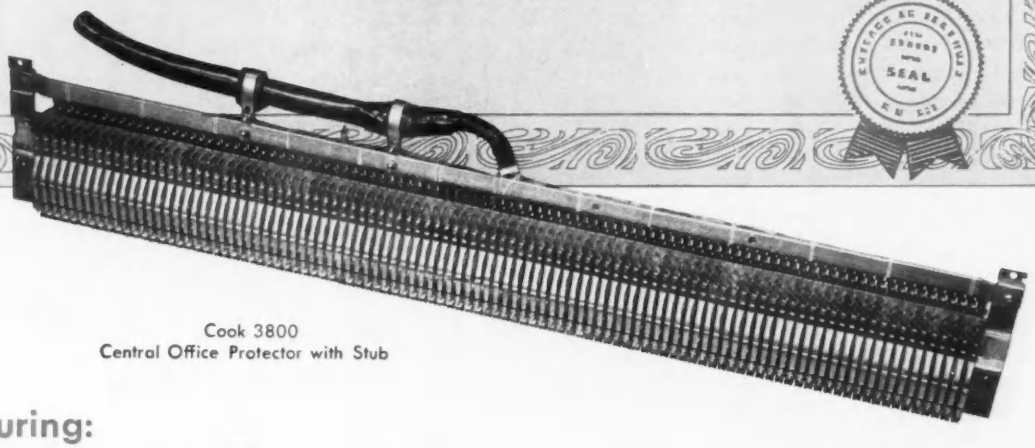

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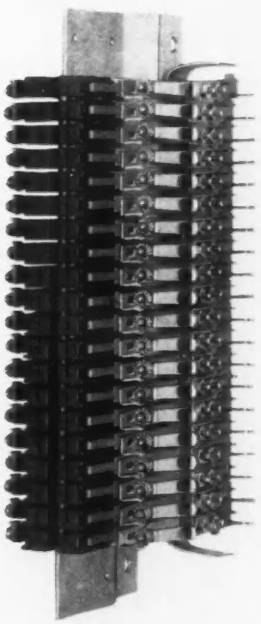

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New Products' Showcase

SUPPLIES And EQUIPMENT

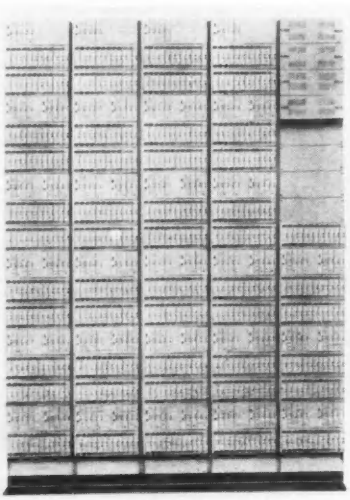
By DICK REYNOLDS

Transistorized Carrier

A COMPLETELY transistorized microwave carrier system has been introduced by the Texas Division of Collins Radio Company. Designated the Collins MX-106 Microwave Carrier System, unit handles 600 voice channels whose quality meets or exceeds toll circuit requirements.

The MX-106 uses the frequency division principle with single sideband, suppressed carrier techniques. Frequency allocations, sideband allotment, and carrier levels are compatible with Collins MX-103 Carrier, Western Electric L-Type Carrier, CCITT and others. To achieve maximum channel density, multiple modulation techniques are used to form a composite baseband signal for transmission by broadband transmitting equipment.

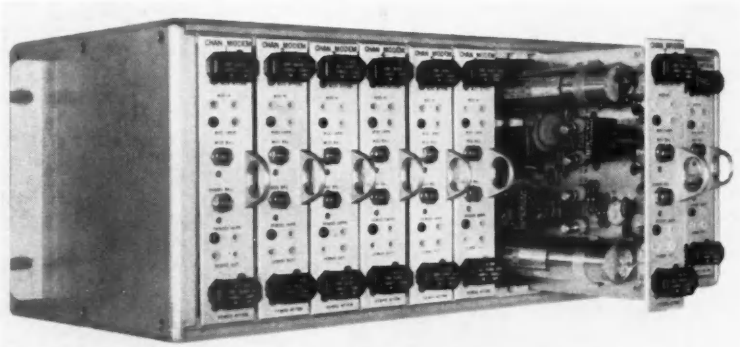
All active MX-106 components affecting the signal path are semiconductors, which operate well below their maximum ratings. Printed wiring circuits and a minimum of transistor types assure ease of maintenance. For sideband and frequency selection, the system uses Collins Mechanical Filters. These have essentially flat bandpass characteristics with excellent skirt selectivity, giving long term stability with no adjustments necessary.



600 Channel Transistorized Carrier Terminal.

All MX-106 circuits are printed on card modems that plug into special rack-mounted card cages, 12 modems to the cage. Card size is approximately 1⅜ by 6 by 9 inches, and the card cage occupies approximately 7 inches of rack space in a standard 19-inch relay rack. For 24 channel modems and base group modulators, rack space required is only 21 inches.

Standby features of the system include 100 percent backup of any equipment common to 12 or more channels. Sensing of standby equipment is provided. *Check NP* 624.

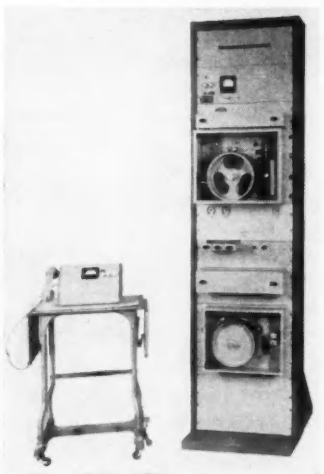


Card Cage Containing 12 Channel MX-106 Base Group.

Weather Announcer

AUTOMATIC Electric Company has developed a special Automatic Weather-Announcer. This new equipment will give a recorded weather forecast and commercial message to people calling its special number.

The unit can be set up so that the weather forecast message can be changed at any time from a remote control unit miles away from the Weather-Announcer main unit. The magnetic drum recorder (top section) can be used for any length message



up to four minutes. When the weather report is shorter than four minutes, the pickup head automatically resets to the starting point after the message ends, so there is no "dead" period of quiet.

The drum-mounted loop recorder (bottom section) has a capacity of

six messages, each six seconds in length. *Check NP* 625.

Backfill Blade

THE DAVIS T-66 Trencher now can be equipped with a companion backfill blade so that one machine and one man can handle the whole job, from initial cut to backfilling.

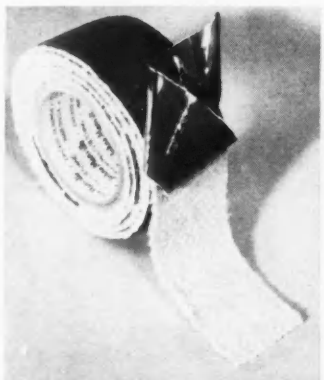
The 42" backfill blade attaches directly to the digging boom which is hydraulically controlled. This enables

the operator to raise and lower the blade as desired. It can be set straight or angled to the left for parallel backfilling.

Instant forward/reverse is obtained by hydraulics which power a two-speed gear reduction unit. By reversing the flow of hydraulic oil with a hand lever, the Davis T-66 immediately changes its direction of travel. *Check NP* 626.

Asbestos Tape

ASBESTOS TAPE with a pressure sensitive adhesive backing is now available from Johns-Manville. Called Besto-Tak, the new product offers many advantages in industrial appli-



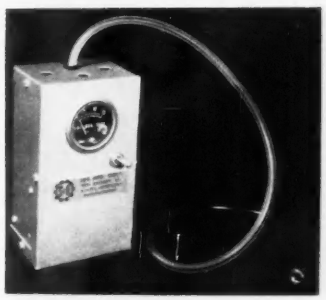
cations where asbestos tape is needed for assembly purposes. The adhesive holds the tape in place while parts can be positioned or covers applied.

Besto-Tak is available for services up to 500F in commercial grades, and up to 900F in other grades. Its use in an unsupported structure, however, is limited to 275F, the point at which the adhesive begins to lose strength. *Check NP* 627.

Pressure Alarm

S & G MANUFACTURING Corporation now lists as Part No. 8279 a new Cable Reel Pressure Alarm to be used where telephone cables are plowed in under air pressure. The Alarm will give assurance that the cable is under protection as it is being plowed in place.

Should the cable sheath be damaged in the process of plowing, the alarm will indicate when the air pressure is released causing the contact



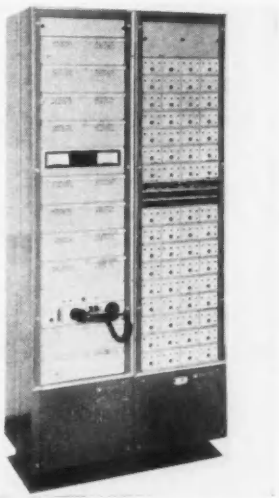
to make and ring the alarm signal. When the alarm comes in, the plowing can be stopped and the cable dug up behind the plow until the leak is located and repaired. After proper repairing of cable leak, the Alarm can be reset and plowing can be resumed.

In addition to plowed in cable application, the alarm can also be used for pulling cables in duct runs. Any type of cable that requires pressure at installation and is subject to sheath damage can and should be protected with this equipment. *Check NP* 628.

Microwave Package

MOTOROLA has developed a transistorized microwave package which includes new RF, multiplex, telegraph carrier and alarm equipment. Motorola has labelled its new transistorized line The 50 Series. RF equipment is designated MR-50; the multiplex is MC-50; telegraph carrier is MT-50; and the alarm system is MA-50.

All four equipments in the new package incorporate modular construction and etched circuit cards for



Transistorized MR-50 and MC-50 equipment is housed in racks shown above.

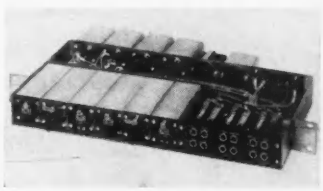
ease in servicing. Pull out drawers enable "in service" maintenance from the front of the racks. The equipments can be operated from either AC or DC power sources. Solid state components are utilized for high reliability.

The only tube in the entire package is a long life reflex klystron tube in the transmitter of the MR-50 RF equipment. Providing a minimum one-watt klystron output, this tube has a life expectancy of 20,000 hours of continuous operation. *NP* 629.

Repeater Terminating Unit

A NEW telephone repeater terminating unit has been announced by Altec Lansing Corp.

The unit is equipped with test circuit jacks and is designed for installation on standard 19 inch relay rack, occupying only 1¾ inch of rack height. It accommodates plug-in units



Paper Insulated Lead Sheathed Telephone Cable

Paper Insulated Lead Sheathed Telephone Cable—Armored

Paper Insulated Lead Sheathed Telephone Cable—Jacketed

Rubber Insulated Lead Sheathed Telephone Cable

Exchange Area Telephone Cable—Aerial & Duct Type

Exchange Area Telephone Cable—Direct Burial Type

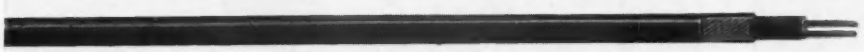
Rural Distribution Telephone Wire—.109 Inch Steel Support Wire

Rural Distribution Telephone Wire—.134 Inch Steel Support Wire for long span installations

Urban Distribution Telephone Wire—.109 Inch Steel Support Wire

Interior Telephone Cable

Drop Wire—Paralleled Figure 8



Drop Wire—Paralleled Reinforced

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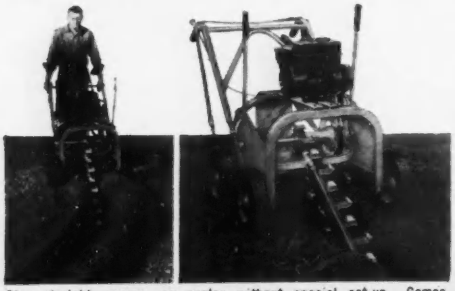

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Fast trenching at lowest cost. Reduces man-hours to minutes. Eliminates disadvantages of subcontracting. A profitable, inexpensive machine to own and operate.

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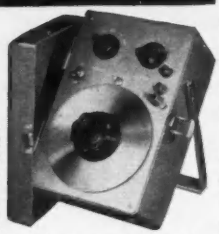

Completely transistorized unit with no power consuming tubes. 4½" dial of 300° excursion with 6/1 knob ratio permits accurate setting of frequency. Aluminum case and cover protect unit for storage and carrying. Aluminum handle provides angular support for easy reading.
Frequency Span 5.5 Cycles to 600 KC in 5 bands.
Dial Span 10 to 1
Output impedance 600 ohms
Maximum Output Voltage 5 volts into 600 ohms. Open circuit 10 volts. Variable by output attenuator.
Voltage Stability within 1%. Frequency Stability instantaneous and longtime within 2%.
Distortion at rated output less than 1%.
Size 5" x 8" x 4½"
Uses four 6 cell mercury batteries.
Weight with batteries 4 pounds.

Stewart
Full Transistor
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For portable and field use. Accuracy and stability are combined in this laboratory instrument.

NO TUBES—A completely transistorized Unit, economical in battery consumption. Requires no warm-up time.
High stability is achieved by two independent feedback loops, precision resistors and printed circuit wiring. High input impedance and freedom from fluctuations, hum and capacitance of power lines. Save, time and assure better testing.
—50 DBM to +50 DBM, 11 ranges in RED, .003 to 300 volts, 11 ranges in BLACK. Input impedance 3 megohms shunted by 25 microfarads.
Accuracy 3% — 50 cycles to 600 KC. 5% — 30 cycles to 1 MC.
Size 5" x 8" x 4½".
Battery requirement two 5 cell mercury batteries. Aluminum case.
Wt. with batteries 2 lbs.

THESE UNITS AS A COMBINATION, PROVIDE ALL EQUIPMENT NECESSARY TO CHECK TRANSMISSION LINES, CARRIER EQUIPMENT, SOUND SYSTEMS AND OTHER TYPES OF FIELD AND LABORATORY WORK.

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enabling assembly of the following types of repeater sets: two-wire to four-wire termination, four-wire intermediate, and two-wire to two-wire.

These plug-in type circuit units furnish a rapid and simple means of establishing repeater VF telephone panels at PBX installations, at general telephone circuits and for telegraph and teletype circuits. *NP* 630.

Nameplates

NEW SELF-Adhesive Nameplates, mounted on dispenser cards have been announced by W. H. Brady Co. Two types are available, self-adhesive Card/Mounted Nameplates; and aluminum Foil and Polyvinyl Chloride.

Aluminum Foil Nameplates are comparable to other types of metallic nameplates for appearance, permanence and physical properties. Made of 3-mil thin aluminum foil material,

they resist solvents, oil and dirt. They are heat resistant to 350°F. Printing is permanently debossed in the nameplate. The self-sticking adhesive is aggressive, nameplates cannot be removed and reapplied without evidence of tampering.

Card/Mounted Vinyl Nameplates are used wherever permanent color identification is desired. *NP* 631.

New Elbow

BUCKET access from the floor of the body is an exclusive feature of the LD-40 Elbow now being manufactured by Holan Corporation. The new Elbow reaches to a working height of 40 feet and can be operated by one man.

In addition to the easy-entry bucket which rests on the floor of the body,

Getting the lowdown?

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→ Why? One service all members enjoy is the real lowdown—factual and fast—about what's going on in telephony.

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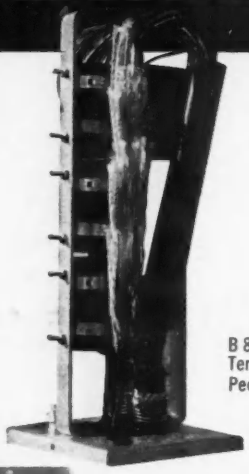
→ By taking part, little and big companies alike know the strength of teamwork.

→ For less than you may think, your company can benefit from USITA (membership dues are tax deductible). For details, just telephone the Association's Washington offices COLLECT (National 8-6512) or write: United States Independent Telephone Association, 438 Pennsylvania Bldg., Washington 4, D. C.

INDEPENDENT

USITA keystone of independent telephony

SUPERIOR
WIRE OR CABLE
Terminal
PEDESTALS



B 800 Cable Terminal Pedestal

B 700 W Pedestal

B 700 W Pedestal

B 900 Pedestal

for OUTSIDE BURIED PLANT

Made especially for construction where buried plant facilities are employed. Superior Pedestals are available in three basic terminal pedestal designs.

For a single buried wire or for a cable as large as 400-pairs, Superior Pedestals provide a quick and simple method of installation . . . puts your outside buried plant in service without delay!

The pedestals, made of heavy steel, hot-dipped galvanized **after** fabrication, are supplied complete with all mounting hardware, terminal support brackets and grounding lug.

For easy installation and positive all-weather protection of outside buried plant terminals, order Superior terminal Pedestals.

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the LD-40 Elbow incorporates several features which insure stability and maximum range without the use of outriggers. Using the same reverse offset superstructure and torsion bars

designed for the popular Holan Squirt Boom which was introduced earlier this year, the LD-40 provides a firm and stable aerial nest in all positions. It can be mounted on an 84" CA, 14,000# G.V.W. chassis.

The metered remote controls are located on the inboard edge of the bucket and the slave and main controls on the superstructure. The bucket is suspended in an offset yoke (patents applied for) to facilitate bucket entry, increase versatility and working range, and provide a lower stored height (10'). *Check NP* 632.

Communications Towers

A NEW line of two-way radio communications towers ranging in height from 10 to 500 feet has been introduced by Motorola. The new line includes eight bolted or welded guyed towers and one self-supporting model.

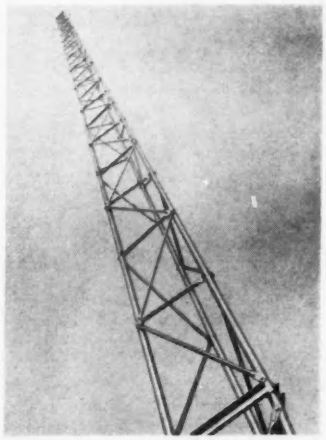
Five of the guyed towers are of bolted, tubular steel construction. The maximum height of the smallest of these models is 130 feet while the tallest can be raised to 440 feet.

Two other guyed towers in the new line are constructed of welded solid steel cross-braces on tubular legs. The two units have maximum heights of 150 and 200 feet.

Towers in all seven models have a windload rating of at least 30 pounds per square foot. Possible antenna loads vary from one antenna for the lightest models to five for the heaviest model.

The Motorola line also includes a very heavy duty bolted angular steel tower which can be raised to 500 feet with 40 pounds per square foot windload rating. This tower will support five antennas.

Motorola's new self-supporting tower has a standard maximum height of 120 feet. Designed especially for urban installations, it requires only a maximum eight foot square ground area. *Check NP* 633.



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NP 629..... NP 630..... NP 631..... NP 632..... NP 633.....

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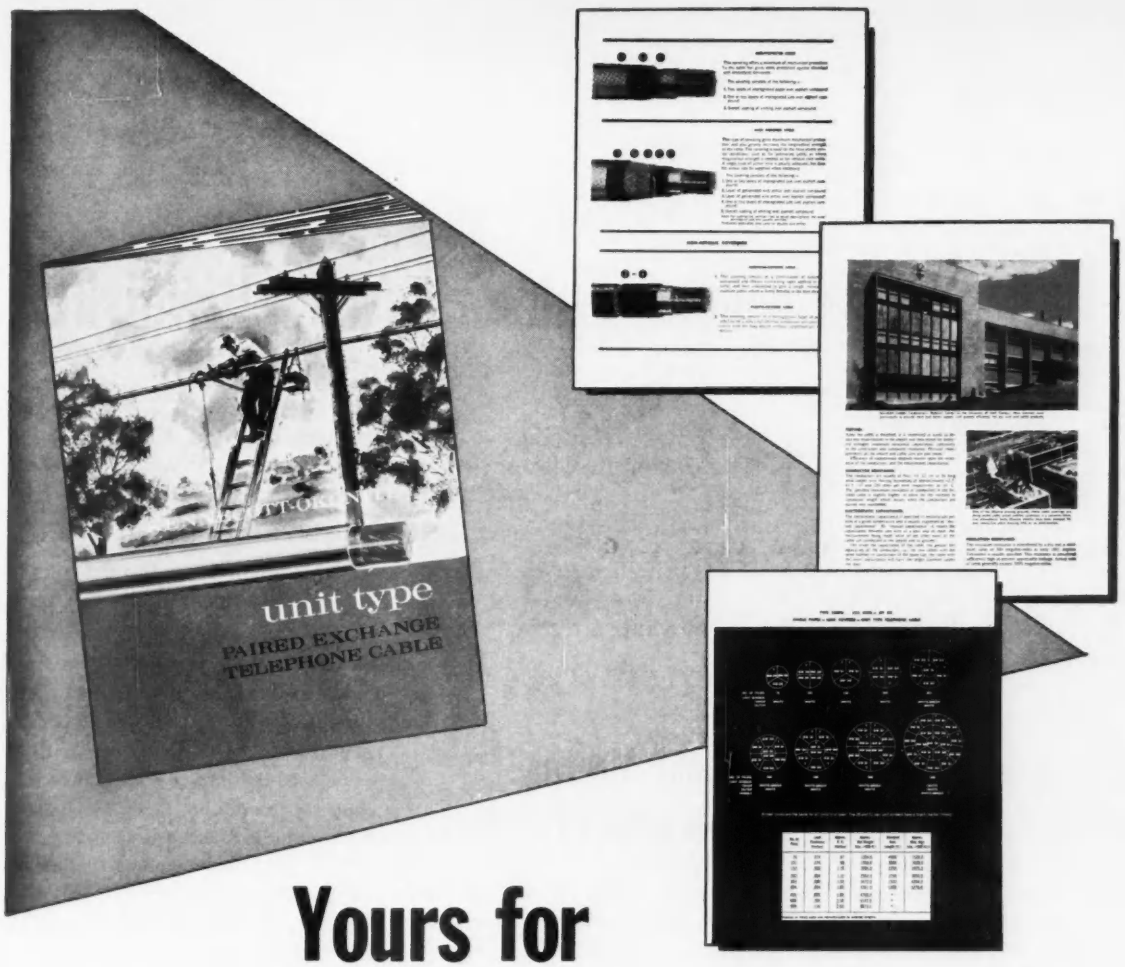

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Telephone Industry News Highlights

COAST-TO-COAST REPORTS

- Texas Telephone Association holds Annual Convention: Marion A. Clay reelected president.
- C & P Tel. Co. of Washington reports substantial growth in 1960 . . . DDD expansion highlights Southern Bell report.
- Carolina Tel. & Tel. to spend $11 million on expansions and improvements . . . Gene K. Beare named president, Sylvania Electric.

Texas Association Holds Annual Meeting: Marion A. Clay Reelected Association President

SELLING by the telephone industry was brought into a new focus for members of the Texas Telephone Association by Ben Smith, general merchandising manager for Southwestern Bell Telephone Co., during his discussion of "Markets for Profitable Telephone Service in the '60's."

"Privilege brings with it responsibility," Smith told TTA members at their meeting at the Rice Hotel in Houston.

"We have the privilege of providing communications services to the public," he said. "This privilege carries an important responsibility to offer the newest, best and most serviceable equipment to this public, our customers."

"You'll note I refer to communications services and not to 'telephone services'," Smith added. "We used to be in the telephone business but rising competition and new communications techniques demand that we broaden this viewpoint. If we don't learn to think of providing total communications services in our business, we may not have any business at all in the future."

Smith said that marketing has taken on a more important role than ever before in the telephone industry, due to increasing competition and new communications techniques.

Defining marketing as "What you sell, where and when you sell it, how and why you sell it, and to whom you sell it," Smith stated that, "Doing these things right will determine your profits."

"Put our marketing yardstick on residence extension sales," Smith said. "Extensions are the 'what' of our marketing program. We got the 'why' by asking customers their reasons for wanting additional phones in their homes. They told us they buy extension phones to save steps and time and for convenience. Customers also told us that the kitchens and bedroom are their favorite locations for extension telephones. There is a market here because, of course, every home has a kitchen and the average home has 2.22 bedrooms. In fact, 81 per cent of the homes have two bedrooms or more. So these locations are the 'where' of our sales program."

"Now we must decide 'to whom' can we sell," he continued. "This is easy, too, because surveys show us that most one-telephone homes have these phones in the living room, dining room or hall. So we have plenty of customers."

As for the "how" to sell, Smith stressed showing the customer the product — "the color telephone."

"People want color phones but they must see them," he pointed out. "We must show them the very latest equipment on the market. This is part of our responsibility to our customers."

Smith told the group that the farm market can also be profitable.

"Farmers view telephone service as very necessary and they are receptive to new services that will make the telephone more useful and convenient," he said.

The farm market, too, is part of the industry's responsibility, he added. Telephone companies must provide the communication services farmers want and need, and must offer these services to farm customers.

Smith also showed the group a

film, "Town Called X," which illustrated how training and sustained sales interest by telephone people has resulted in a high development of telephone service items in a small community.

Alvin A. Burger, executive director of the Texas Research League, Austin, told the Texas Independents that the total tax burden borne by the American people today "is the largest in our country's history."

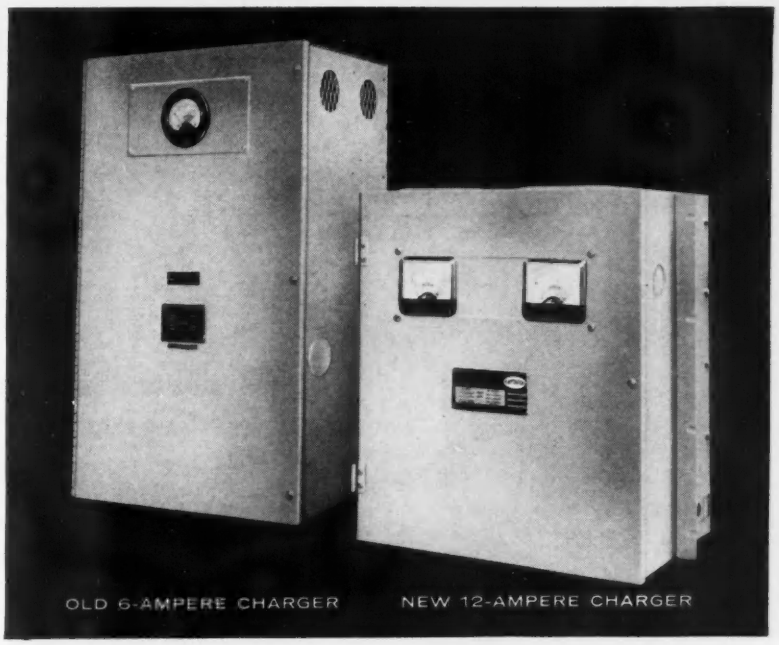
"Taxes for all government — federal, state, and local — this year will take $125 billion from the pockets of our taxpayers," he said. "This amounts to about 30 per cent of our national income. It is almost as much as the American people are now spending for food, clothing and shelter combined."

Pointing out that taxes for all three levels of government — federal, state, and local — are still on a steady upward trend, with local and state taxes climbing fastest since World War II, Burger stated that since 1946 state and local taxes in the 50 states, taken together, have almost quadrupled, and they're increasing by more than $3 billion annually.

Warning that "in our preoccupation with the tax side of the problem, we may overlook what might be done to keep down the spending side," Burger emphasized that "whatever course we take on taxes, every effort should be made to keep non-essential state spending at a minimum."

"Nearly every study our league has made of state operations has shown where some savings could be effected, and funds conserved," he said. "Many of our economy recommendations have been adopted: some important ones have not. The other day our league published a list of these and other savings opportunities disclosed by our own studies and by those of official state bodies. If adopted, these economies could cut our new state tax needs by more than $100 million in the next biennium."

Stressing the growing impact which federal spending and tax policies are having upon Texas government, Burger reported that five years ago — in 1956 — Texans paid $2.6 billion in federal taxes — twice as



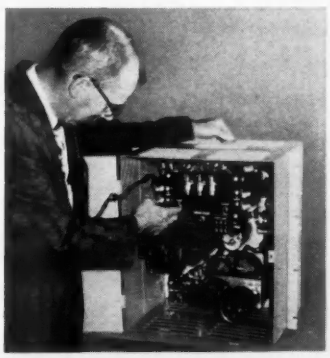
How telephone battery chargers have changed!

Twice the power, half the size!

Yes, these new Raytheon silicon battery chargers pack twice the battery charging capacity in half the space. But that's not all. They also provide excellent regulation (±1%) and noise-free output (30-millivolt filtering) with improved dependability.

These new solid-state designs use fewer components, minimizing possibility of failure through simplified design. They utilize conservatively rated silicon rectifiers which are non-aging and have extremely low power losses. In your exchanges, this means:

- greater operating efficiency
- longer life
- no adjustments
- space-saving advantages



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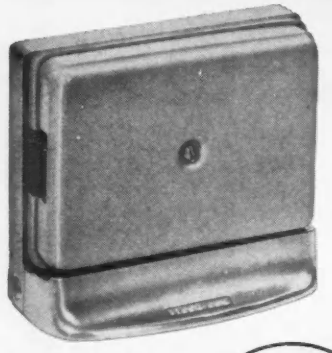
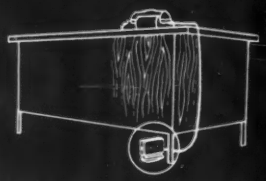
ends needless marring of office furniture





gives you beauty, uniformity and economy!

Floor-Con allows all telephone installation work to be completed in advance of moving. All wiring is concealed. Approved and specified by telephone companies, Floor-Con is used exclusively in many large buildings in business, industry and government. Floor-Con attaches to all types of underfloor duct systems, flush type floor boxes, single conduits, through the floor—or if conduits are not provided, screws directly to the floor.

Comes in four plated finishes: Chrome—satin or bright, and Brass—satin or bright.

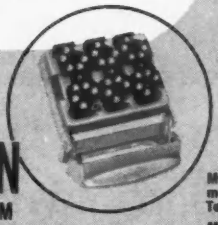
All necessary fittings will be supplied to adapt Floor-Con to your particular duct system or floor installation—please specify the type or make in use.

MODEL 102 shown with standard telephone equipment, accommodates up to 6 No. 44-A Connecting Terminals (3 on each side).

MODEL 104 accommodates up to 8 No. 44-A Connecting Terminals (4 on each side).

Or, the back of either model can be used to install external ringers, buzzers or auxiliary equipment.

(Pat. No. 2854166)



For catalog information and prices, write:

FLOOR-CON
Dept. - TM
759 North Spring Street / Los Angeles 12,
California / Telephone: MAdison 4-5400

GENERAL MACHINE PRODUCTS COMPANY, INC.

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PRESSURE TESTING KIT

COMPOUND

B, C, D, E, & G CABLE LASHERS

Special Purpose Tools To Specifications — Catalog on Request

Over 600 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate shipment

much as all state and local taxes combined.

"But," he said, "The federal tax burden has grown since then, so that this year — 1961 — the Texas share will amount to $3½ billion — a $900 million increase in five years. To this $3½ billion you must add another $400 million of social security taxes collected from us by Uncle Sam."

Commenting that the total tax burden "we bear today is already higher than it should be," Burger warned that "if it must be increased anywhere, let it be at the state and local level, where we stand a better chance of seeing just how our money is spent."

"It will cost us much more, both in taxes and in freedom," he said, "if we abdicate any more of our local responsibilities to a far-off central bureaucracy, where those knowing the least about them, and having the least concern for their well-working, would exercise control over them."

Other Texas Convention speakers included: USITA President C. C. Pearce, Riceville, Ia., Commercial Conference Chairman, J. O. Ware, Robstown; Traffic Conference Chairman, Winnie B. Burnett, Brownwood; Frank Pyle, Houston; Elizabeth Schnautz, San Marcos; Raymond Bolerjack, San Angelo; Bud Paulsen, Brownwood; Louis E. Throgmorton, vice president, Republic Life Insurance Co., Dallas; Plant Conference Chairman, Ken Madry, Brownwood; Jim Sage, Houston; and F. E. Elrod, San Angelo.

Marion A. Clay, general manager, Lufkin (Texas) Telephone Exchange was reelected president of the Texas association. Other re-elected officers are: 1st Vice President, W. S. Bain, president, Mid-Texas Telephone Co., San Antonio, Texas; 2nd Vice President, H. Y. Price, Jr., president, San Marcos Telephone Co., Inc., San Marcos, Texas; Treasurer, Pam D. Grinstead, auditor, Kerrville Telephone Co., Kerrville; and Executive Secretary, J. B. Haley, Austin.

Directors of The Texas Association are: W. S. Bain, San Antonio; Fabian Bearden, Baird; Morris S. Burton, Tyler; J. T. Chambers, Tenaha, Marion A. Clay, Lufkin; Dee

Cole, Greenville; E. H. Danner, San Angelo; Cliff R. Dowd, Hawkins; D. G. Gardner, Jr., Nacona; Claud H. Gilmer, Rocksprings; R. A. Goodson, Dallas; Pam D. Grinstead, Kerrville; Chas. A. Hendrix, Brazoria; J. B. McDuff, Crockett; Corwin Mendenhall, Anahuac; H. Y. Price, Jr., San Marcos; J. T. Ricketts, Vega; Guy Smelser, Bogata; D. T. Strickland, Brownwood; W. G. Winters, Houston; and Oscar Burton, director ex officio, Tyler.

C&P Of Washington Reports Growth in '60

THE Chesapeake & Potomac Telephone Co. of Washington "continued to experience substantial growth during 1960," it was pointed out last month in the annual report.

President James B. Morrison noted this growth in the number of telephones and local and toll calls. At the end of 1960, there were over 642,000 telephones in Washington, an increase of 24,000 for the year. About 86% of residence customers now have individual line service and there are 51 extension phones in service for every 100 residence customers. Local telephone messages during 1960 totaled 689,000,000, an increase of 5.7% over 1959. Out-of-town messages increased 9.4% over 1959, with a total of almost 15,000,000 reported.

The company's financial situation improved during 1960, "but earnings are still below the level of other successful businesses, including several major telephone companies," the report said. Operating revenues for the year increased to $67,700,000, and operating expenses, including taxes, totaled $58,300,000. Earnings per share increased to $8,685,083 and $7,570,654 in the two years, respectively. Revenues in 1959 amounted to $63,900,000, while expenses including taxes, were $55,900,000.

Extension of DDD Highlights Southern Bell's 1960 Results

A PRINCIPAL result of the $320,000,000 construction program carried out by the Southern Bell Telephone & Telegraph Co. in 1960 was an expansion of direct distance dialing to provide this service to customers

LOW-COST
DEPENDABILITY
IN TODAY'S MOST VERSATILE
MICROWAVE COMMUNICATIONS SYSTEM!

FLEXIBLE MULTIPLEXING EQUIPMENT • HIGH DENSITY OR LOW DENSITY TRANSISTORIZED SYSTEM, EMPLOYING TOTALLY UNIQUE TECHNIQUES TO GIVE YOU THESE ADVANTAGES:

Economical initial purchase of 1 to 12 channels, easy expansion to 600 channels. Lower initial, expansion and maintenance costs. Greater flexibility, with elimination of the need for common equipment. Filter options for easy drop and reinsert configurations. New level of reliability . . . up to 12 channels without common equipment and up to 120 channels with no equipment common to more than 12, except for the power supply.

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7134-A

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NEW ISSUE

350,000 Shares

itc / Independent Telephone Corporation

Common Stock

($1 Par Value)

Price $9 Per Share

Copies of the Prospectus may be obtained from the undersigned only in states in which the undersigned is qualified to act as a dealer in securities and in which the Prospectus may legally be distributed.

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Stein Bros. & Boyce **Walston & Co., Inc.**

April 19, 1961.

Pioneers in CONTINUOUS FEED PRESSURE SYSTEMS & MAINTENANCE EQUIPMENT

NEW! for small cable plants

MICRO-WAVE DRYER

Provides dependable dry air for Wave Guides, Coaxial Cables and Telephone Cables in small plants of less than 50 miles. BRAND NEW from S & G!

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S & G MFG. CORP.

S & G EQUIPMENT MEANS QUALITY, ECONOMY AND DEPENDABILITY

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in 90 more exchanges with about 1,700,000 telephones, President Ben S. Gilmer pointed out in his annual report to stockholders. At the end of the year, users in 120 exchanges with a total of over 2,500,000 telephones had this service.

Southern Bell had a net gain of 429,000 telephones last year to bring the total in service to 7,250,000, whose users placed an average of nearly 45,000,000 local calls daily. Long distance calls increased about 7% over 1959 and averaged 1,100,000 a day.

Revenues in 1960 increased but expenses rose at a faster rate, the report noted. Revenues were up 8.5% while expenses and taxes increased 9.1%. Earnings per share were equal to $1.88 compared with $1.89 a year earlier.

Carolina Telephone To Spend $11 Million

CAROLINA Telephone & Telegraph Co., Tarboro, N. C., plans to spend nearly $11 million in 1961 for improvement and expansion of telephone service in eastern North Carolina, according to H. Dail Holderness, company president.

"This compares with $9 million spent for construction of telephone facilities during the past year," Holderness said. "In order to keep abreast of the industrial and residential growth which we expect during the coming year it is necessary that we spare no effort in enlarging our facilities and offering new and better means of communications to the citizens of our area. A major portion of this expenditure will be in connection with further development of communications services for rural areas."

At the year end, Carolina Telephone served 195,000 telephones — a gain of 15,000 over 1959.

Gene K. Beare Named President, Sylvania Electric

GENE K. BEARE has been named president of Sylvania Electric Products Inc., a subsidiary of General Telephone & Electronics Corporation, according to an announcement by Donald C. Power, GT&E chairman and chief executive officer. Beare

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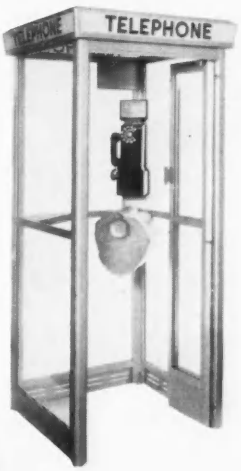
BEST for rust and
stain resistance



Highly resistant materials, tempered glass, anodized aluminum and porcelain enameled steel, give the maximum in protection.

the B N Booth

For full particulars, consult your distributor or write direct ...
Benner-Nawman, Inc., 3421 Hollis Street, Oakland 8, California.
a B-N booth is a busy booth!

USI Multi-frequency RINGERS

The USI Multi-frequency Ringer is designed to fit any "500" type telephone set that will accommodate a WE Type "C" ringer.

This ringer features a patented mechanical tuning system that is independent of the tapper and gongs.

USI Ringers have lower current requirements. You can reduce interference to adjacent circuits with USI Ringers and use more ringers on a given line.

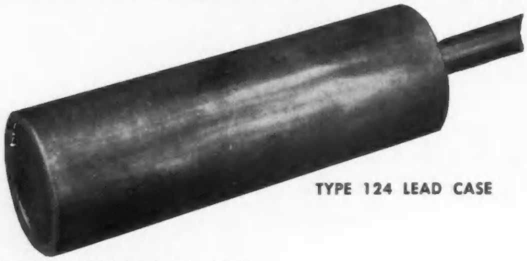
The extra high impedance of USI Multi-frequency Ringers reduces voice frequency loss.

USI CORP.

UNITED STATES INSTRUMENT CORPORATION

CHARLOTTESVILLE, VIRGINIA

CEECO TYPE C124
LEAD CASE ASSEMBLIES
FOR AERIAL (STRAND) MOUNTING
CONTAINING FOUR TO SEVENTY-SIX COILS



TYPE 124 LEAD CASE

- *LEAD STUB ASSEMBLIES ARE* PRESSURIZED
- *PLASTIC STUB ASSEMBLIES* ARE SEALED IN THERMOPLASTIC COMPOUND TO INSURE PROTECTION FROM MOISTURE.

THESE ASSEMBLIES CAN BE EQUIPPED WITH LOADING COILS, CAPACITORS, SATURABLE INDUCTORS, AND MF UNITS.
WRITE US FOR ASSISTANCE ON YOUR LOADING AND TRANSMISSION PROBLEMS.
CEECO PRODUCTS ARE SOLD BY YOUR TELEPHONE EQUIPMENT SUPPLIER.

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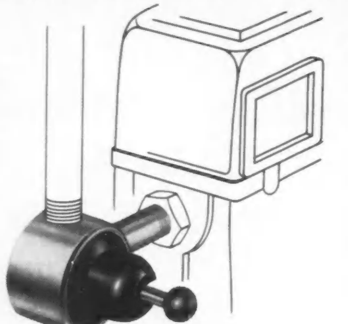
SHUT-OFF VALVE FOR AIR SUPPLY LINES ELIMINATES HEADERS!



Dahl Pressure Shut-Off Valves positively control dry air supply . . . can be easily joined together without headers for connecting a group of cables together and still allow isolation of individual cables.

Developed in collaboration with Bell Telephone Laboratories, Inc., this versatile indoor valve controls flow to an individual cable without blocking flow to adjacent valves or cables. Joined together by nipples, these valves can be used in unlimited numbers . . . eliminating need for separate headers.

Neoprene diaphragm (toggle actuated) bears against a smooth brass seat for positive closures.

REQUEST Catalog T-1 for complete data on this valve and other Dahl pressure system valves for indicating and regulating air usage in continuous flow systems. G. W. Dahl Co., Inc. 80 Tupelo St., Bristol, R. I.

G. W. DAHL CO., INC.
SPECIALISTS IN COMPACT VALVES AND CONTROLS

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GENE K. BEARE

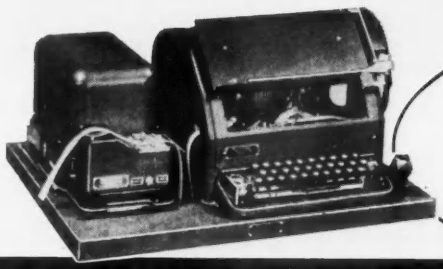
succeeds Robert E. Lewis who resigned to become president of Perkin-Elmer Corp., Norwalk, Conn.

With 1960 sales of more than $130 million, Sylvania is a major producer in the fields of electronics, lighting, television and radio, photography, and National Defense. The company's headquarters are at 730 Third Ave., New York City.

Beare previously had been president of General Telephone & Electronics International Inc., with overall responsibility for all GT&E manufacturing, marketing, and engineering operations outside the United States. Concurrently, he also served as president of Automatic Electric International, Inc.

A native of Chester, Ill., he was graduated in 1937 from Washington University, St. Louis, Mo., with the degree of bachelor of science in mechanical engineering, and received a master's degree in business administration in 1939 from the Harvard Graduate School of Business Administration.

He then joined Automatic Electric Co., which subsequently became a GT&E subsidiary, as assistant to the president. He was named commercial manager of Automatic Electric's affiliated companies in 1946, and general commercial manager the following year. In 1948 he became production manager, and was elected vice president in charge of production in 1954. He became president of Automatic Electric International in 1958,



TELETYPE EQUIPMENT

RECONDITIONED LIKE NEW!

Now available for IMMEDIATE DELIVERY... telegraph printers, including TELETYPE model 14, model 15, model 19 plus typing reperforators, transmitter distributors and parts for many makes and models.

We can offer this equipment at low prices, making it possible to expand communications facilities with a much smaller investment.

Our staff of teletype technicians is thoroughly capable and experienced in modifying this equipment to your specifications.

Our machines are adaptable for TELEX & TWX operation.

All models are available in standard colors to match your decor.

We maintain a large inventory of replacement parts for all types of teletype equipment.

Expand your communications system now with top-grade telegraph printers available from Platt at lowest prices... IMMEDIATE DELIVERY

WESTERN ELECTRIC
HANG-UP BOX
No. 211
BRAND NEW
$6.95

WESTERN ELECTRIC
DIAL
TYPE 6-A
BRAND NEW . . . $5.25

RELAY SPECIAL!
255A Polar Relay. **Only**
Excellent — Checked-out. **$3.95**

MOBILE RADIO

NEW mobile radio equipment FCC approved.

Wide selection of genuine LINK radio equipment for the 25-50 mc and 152-174 mc bands.

Write us now stating number of mobile and base stations required so we can quote you on guaranteed equipment. Expand your mobile radio system with our low-cost equipment which is fully compatible with standard FM systems.

Priced as low as $299.50 for Complete Mobile System

Write for FREE Bulletins listing other New and Rebuilt Communication Equipment

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NOW CARRIER APPLICATION IS POSSIBLE

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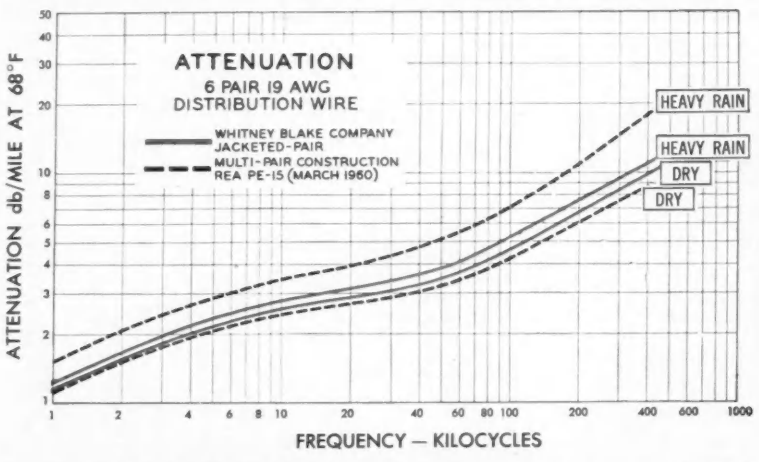
WHITNEY BLAKE JACKETED-PAIR DISTRIBUTION WIRE

JACKETED-PAIR now makes possible the use of carrier equipment as a result of the relatively small change and low level of attenuation. For example, at 400 kilocycles, the attenuation for PE-15 type increases106% from dry to heavy rain while JACKETED-PAIR increases only 12% at this frequency.



Write for full details shown in FREE Bulletin T-6

WB WHITNEY BLAKE CO.

NEW HAVEN 14, CONN.

Telephone CHestnut 8-5515 TWX: NH 84

GEORGE F. HENKEL has been appointed Technical Advisor to the sales staff of The Lindsay Telephone Supply Company. He will assist the Lindsay sales representatives in both the Northfield, Ohio and Atlanta, Georgia branches by introducing new electronic equipment for the telephone industry. Before joining Lindsay, Henkel was associated with Ohio Bell.

and president of GT&E International in May, 1960, when that organization was formed.

During World War II, he served in the United States, holding the rank of lieutenant. Beare is a member of the Armed Forces Communications and Electronics Association, the Pan American Society, and other professional and industry organizations.

C & S Products Appoints New Representatives

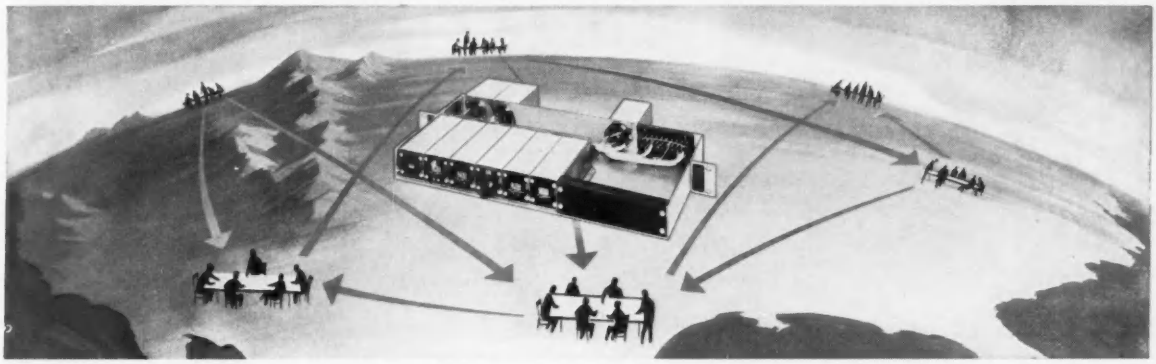
C & S Products Co., Windsor Locks, Conn. has announced the recent appointment of John T. Hill and William M. Rambo as representatives for Semper-Seal, a new epoxy-type cable splice and blocking compound.

Hill was formerly president of the J. T. Hill Co., distributors of electronic components. He is a past president of The Electronic Representatives Association and is a Charter Member of Junior Radio Pioneers of Southern California.

Rambo was also formerly associated with the J. T. Hill Co. as field sales representative.

Hill and Rambo maintain offices at 420 South Pine St., San Gabriel,

NEW...ALTEC LOUDSPEAKING TELEPHONE SYSTEM FOR INTER-OFFICE TELEPHONE CONFERENCES COAST-TO-COAST



Now, Derive Unlimited Extra Revenues from Existing Lines with This Important Advance in Telephone Service!

Coast-to-Coast inter-office telephone conferences with many talkers at each location are now possible with the new ALTEC 7302 Loudspeaking Telephone System. The 7302 is a fully transistorized system that maintains uniform talking and listening levels regardless of distance with speech transmission of such great fidelity that familiar voices are recognizable instantly. With an effective audio coverage of a large size executive office, the system offers freedom of movement and comfortable hands-free operation to large groups of talkers.

The 7302 operates on *existing telephone lines* in conjunction with type 510 set or equivalent. Associated ALTEC equipment includes the 755C Loudspeaker and one of the following ALTEC Cardioid Microphones: Models M-30, 683A, or 685A. The 7302 mounts in standard 19" relay rack and occupies only 1¾" rack height. Power is supplied to the system from central office or PBX quiet battery supply of 24-26 v DC.

This system—now in use by a nation-wide retailer and a drug chain—provides the answer to their needs for instant consultation among their executives at branch offices throughout the country. With this system, you can now fill the many requests for this type of service from brokerage houses, military command facilities, and any organizations requiring group discussion of problems among specialists in separate locations. For complete information write Dept. TE-5.

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ALTEC LANSING CORPORATION

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La Crosse Telephone Corporation

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R. R. Donnelley & Sons Company

350 East Twenty-second Street, Chicago 16

TYPE 16-B MULTI-STATION 7-CHANNEL CARRIER *is your low-cost answer!*

Budelman Type 16-B Carrier will:

- Provide additional circuits on existing multi-station lines.
- Provide additional circuits on new multi-station lines.
- Improve service on existing multi-station lines.
- Provide new circuits to new stations in areas beyond the 1200 ohm loop.
- Provide additional trunks to remote PBX, PABX, or key telephone systems.

FULLY SELECTIVE 10-PARTY DIVIDED RINGING
SEMI-SELECTIVE 10-PARTY BRIDGED RINGING
SINGLE FREQUENCY CODED RINGING

all this without additional wire lines —without disturbing existing services!

7 Channels — 10 to 140-kc freq range. Applicable wherever attenuation at carrier frequencies does not exceed 35-db.

Write for Bulletin 259-D — or call us

BUCKEYE TELEPHONE & SUPPLY CO.
1250 Kinnear Rd. • Columbus 21, Ohio
Phone—HUdson 8-0655 (Area Code 614)

Annual Sales Meeting was held by Leich Sales Corp. at Wagon Wheel Lodge, Rockton, Ill.

Calif. and will serve the following area: Southern California (south of Monterey, Kings, Tulare and Inyo Counties) and the state of Arizona.

C & S Products also announced the appointment of Arthur F. Schultz, 96 Oxford Road, New Hartford, N. Y. as representative for Semper-Seal. Schultz will cover the territory of New York State, from Albany west.

Leich Holds Sales Meeting In Rockton, Illinois

LEICH SALES CORP., Chicago, held its annual sales meeting at the Wagon Wheel Lodge, Rockton, Ill.

C. W. Schwob and R. D. Friehe, Leich district managers, were co-chairmen of the meeting.

D. C. Gibson, president, announced at the meeting that Leich is continuing to grow to meet the needs of the Independent industry. He stated hat Leich now offers its customers the largest stocks of telephone supplies in the industry. This, he said, will give customers faster service and reduce their inventory problems.

Gibson also cited the addition of Leich's Richmond, Va. warehouse.

TELEPHONE ENGINEERS

Permanent careers with expanding telephone company

Location? The jewel of the Caribbean—Puerto Rico.

Liberal benefits and allowances. Excellent promotional opportunities in both position and salary.

Candidates must be experienced in one of the following areas:

Transmission
Toll Facilities
Outside Plant
Switching (Crossbar)

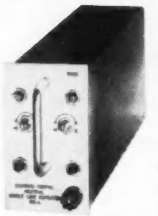
Send complete details of experience in confidence to: Mr. H. A. Brewer, Latin American Area Headquarters.

All qualified applicants considered without regard to race, creed, color or national origin.

INTERNATIONAL TELEPHONE and TELEGRAPH CORPORATION
67 Broad Street • New York 4, New York

TREPAC *Solid State Electronics for* **TELECOMMUNICATIONS**

New TRANSISTORIZED TELEPRINTER REPEATERS



DIAMOND-TREPAC

For High Speed Data & Teletype Transmission

Incorporating Solid State Relay 530C, these new repeaters offer greatly simplified, maintenance-free, operation over lines with heavy AC interference, high leakage and large amounts of characteristic distortion. Units are non-critical as to location in telegraph loop. Repeated signal is clear and consistent. Five complete units mount in standard 19" relay rack.

OPERATES ON SELF POWER DURING POWER FAILURES

MODEL 530-C

TELEPRINTER RELAY

Featuring built-in reliability and ruggedness, these units have long maintenance-free life. Proved by over three years use in field by major communications companies. Will operate both old and new type teletypewriters and eliminates line relays, spark suppressors and rectifiers. Easily mounts within teleprinter housing.

AUTOMATIC TELEPRINTER MOTOR CONTROL

Provides automatic control, of the sending and receiving teleprinter drive motors. Reduces wear and maintenance on motor and clutch mechanical assemblies—generates no heat - 90% saving in size and weight. Easily mounts in teleprinter without modification. No special starting or stopping signals required. Operates from 20 to 60 mil neutral or polar signal.

MODEL 550

TREPAC CORPORATION OF AMERICA
30 W. HAMILTON AVE. ENGLEWOOD, N. J.

TREPAC

This is the sixth of Leich's warehouses which are strategically located throughout the country.

Representatives from each of Leich's departments presented their plans for 1961. Special emphasis was given to Leich's financing program which makes loans on dial switching equipment and supply materials to help telephone companies improve their service.

Leich's Switchboard Sales Department presented Leich's new 80-A stock PABX. This system offers the same service features as Leich's 40A PABX. Also announced were the motel-hotel services now available with Leich's 40A and 80A PABX's.

The Motor Vehicle Department explained the savings possible to Independent telephone companies on trucks, truck bodies, tires, and batteries when purchased through Leich.

Sheckells Appointed Gen. Mgr. Eastern Pre-Cast Corp.

THE APPOINTMENT of John R. Sheckells as general manager was announced by Lynn Hill, President of Eastern Pre-Cast Corp., following the annual board of directors meeting in Chicago.

Sheckells brings with him a wealth of experience gained during his 41 years with the Chesapeake & Potomac Tel. Co. of Maryland.

The major portion of his time was devoted to the engineering and construction of conduit and outside plant operations. The past 15 years he has served as Division Construction Superintendent and the past 6 years as the Division Plant Engineer of Baltimore.

Kitty Hawk Features Dial Telephone System

THE 500-line automatic dial telephone system aboard the U. S. S. Kitty Hawk was developed and manufactured by Automatic Electric Co.

Especially designed for the U. S. Navy, the 715-telephone network provides complete shipboard communications, as well as ship-to-shore service when the supercarrier is in port.

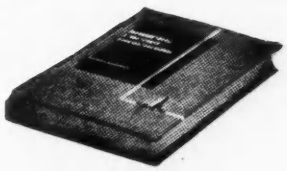
The Strowger automatic switchboard will handle up to 75 calls at one time. Mounted in light weight,

REBUILT by the DAN-MAC PROCESS

For the present we need used Kellogg, North, Stromberg and Western dials and offer to trade A.E. #51 dials at $3.75 each with your old dial.

TELEPHONE REPAIR & SUPPLY CO.

1760 Lunt Ave., Chicago 26, Ill.



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Just Published! Here's a practical manual of tested product-engineering aids to help you get quicker, easier solutions to everyday work problems. It offers a ready-made file of methods, formulas, tables, and charts for engineering top efficiency into devices, components, or complete products. Covers a full range of topics, from accessories and assemblies to clutches, control devices, electrical components, etc. Includes such modern developments as ultrasonics and automated assembly. *Over 1100 drawings show vital design details.*

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Edited by Douglas C. Greenwood

Editor, Product Engineering Design Digest

342 pp., 8½ x 11, over 1100 illus., $9.

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RESISTANCE AND RESISTORS

By Charles L. Wellard

Technical Director, Clifton Precision Products Co.

264 pp., 6 x 8, 82 illus., $8.50

Among the book's many special features you will find a detailed treatment of precision films as a replacement of wirewound resistors. Included, too, is information on the preparation of precision films by pyrolysis, evaporation, and reduction of oxides. Numerous charts and graphs present information that heretofore has seldom been readily available regarding the power and voltage ratings of resistors, the varieties of material used in their construction, and their many industrial applications.

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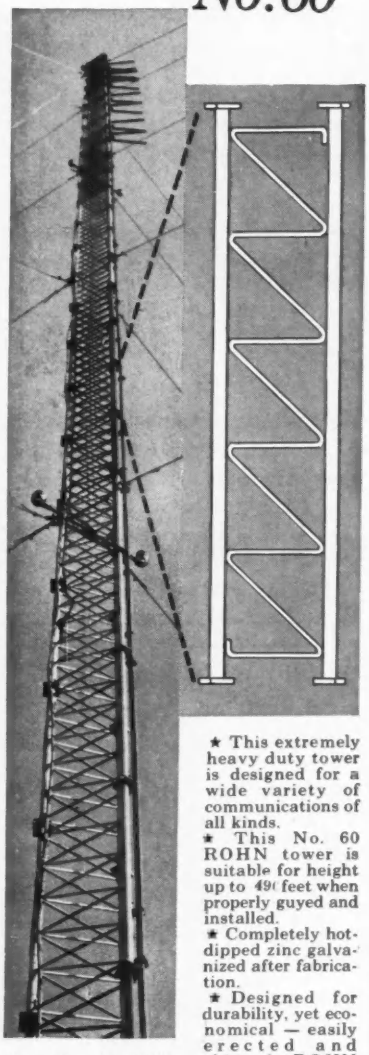

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Three special phones are used in the Kitty Hawk installation. A desk-type, which can be bolted down, has been installed in cabins and office areas. For bulkhead or desk side mounting, Automatic Electric provides a 17-pound wall-type phone. Weather decks are equipped with splash-proof phones mounted in aluminum enclosures. Bulkhead and outside phones have red light devices to illuminate the dials when the ship is darkened. All telephones have locking latches which prevent the handset from jumping off the cradle during the roll and pitch of the sea, or from battle damages.

Power supply for the installation is from a generator, with a 24-cell battery supplement designed to give emergency service for several hours, if needed. Other features include special power ringing equipment to assure that a telephone ring can be heard in noisy locations.

When the carrier is in port, a cordless manual switchboard connects the ship to shore telephone facilities. It is equipped with eight shore-line trunks and can handle three teletype land lines.

S. T. Huey Joins Lynch Communications

SAMUEL TODD HUEY has joined the engineering staff at Lynch Communication Systems, Inc., San Francisco, Calif., where he will develop advanced electronic supervisory control systems, according to Donald Oestreicher, manager of engineers.

Huey received his B. S. in Physics in 1954 and a post graduate certificate in electronics in 1955 from Queens University, Belfast, Ireland. He is a graduate of the Institution of Electrical Engineers in England.

Before joining Lynch, Huey was with Radio Corp. of America, Montreal, Canada, and prior to that was with Marconi's Research Laboratories, Chelmsford, England. A patent application has been made on his work in the data handling field.

Lenkurt Moves S. W. Dist. Office To Dallas

LENKURT ELECTRIC CO., Inc., will move its Southwestern District Sales office from Kansas City, Mo., to Dallas, Tex., early in May. The new district headquarters will be located in suite 1425 of the Southland Center building in downtown Dallas.

Marion C. Royalty, district manager, said the move will permit better service to the five-state area served by his office — Texas, Oklahoma, Kansas, Missouri, and Arkansas. Lenkurt provides engineering services and manufactures a broad range of electronic telecommunications equipment for common carrier, government, and industrial users such as railroads, pipelines, and power companies.

Sales engineers assigned to the office are James N. Hoover, Lester R. Spencer, and William E. Baustiker. Applications Engineer Walter Tibbles rounds out the staff.

Lenkurt is a subsidiary of General Telephone & Electronics.

T. B. Baird and L. V. Stinson Die

T. BARTON BAIRD and L. V. Stinson, two veterans of the telephone industry who were associated with the telephone directory advertising firm of L. M. Berry & Company, died in March.

Born in Clinton, La., in 1884, Mr. Baird began his telephone career with the Southern Bell Telephone & Telegraph Co. as a night operator at Jackson, La. in 1901. In 1912, he was named New Orleans district manager, and in 1923 moved to Birmingham as district manager. He was appointed Alabama manager in 1930, Georgia manager in 1933, Kentucky manager in 1937, and Tennessee manager in 1938. In 1943, Mr. Baird was made general commercial manager for Southern Bell, and was named treasurer of the company in 1947, holding

that position until his retirement in July, 1949. He then joined L. M. Berry & Co. as Special Representative, serving in that capacity until suffering a fatal heart attack on March 23.

Mr. Stinson was born in Richmond, Ind., in 1874. He began his association with the telephone industry in 1903, when he joined the Central Union Telephone Co. in Indianapolis, Indiana. Later he joined the R. R. Donnelley & Sons Co. where he was involved in telephone directory publication. In April, 1925, he joined L. M. Berry & Co., where he served as production manager and sales engineer until his retirement in 1948. He died at his residence in Dayton, Ohio, on March 9.

C. E. Boat Joins Vermeer Mfg. Co.

VERMEER Manufacturing Co. of Pella, Ia., manufacturers of farm, irrigation, ditch-digging and stump removal equipment, has announced the appointment of Carl E. Boat as sales manager. He has been connected with

C. E. BOAT

the sales department of Vermeer since 1950. He will serve in the capacity of sales manager for all sales divisions.

Boat assumed the new position upon the resignation of Bill Willinger, sales manager at Vermeer since 1957. Willinger has established a new firm, Willinger Bros. Equipment Co., West Salem, Wis. The new firm sells Vermeer industrial equipment in the states of Minnesota and Wisconsin.

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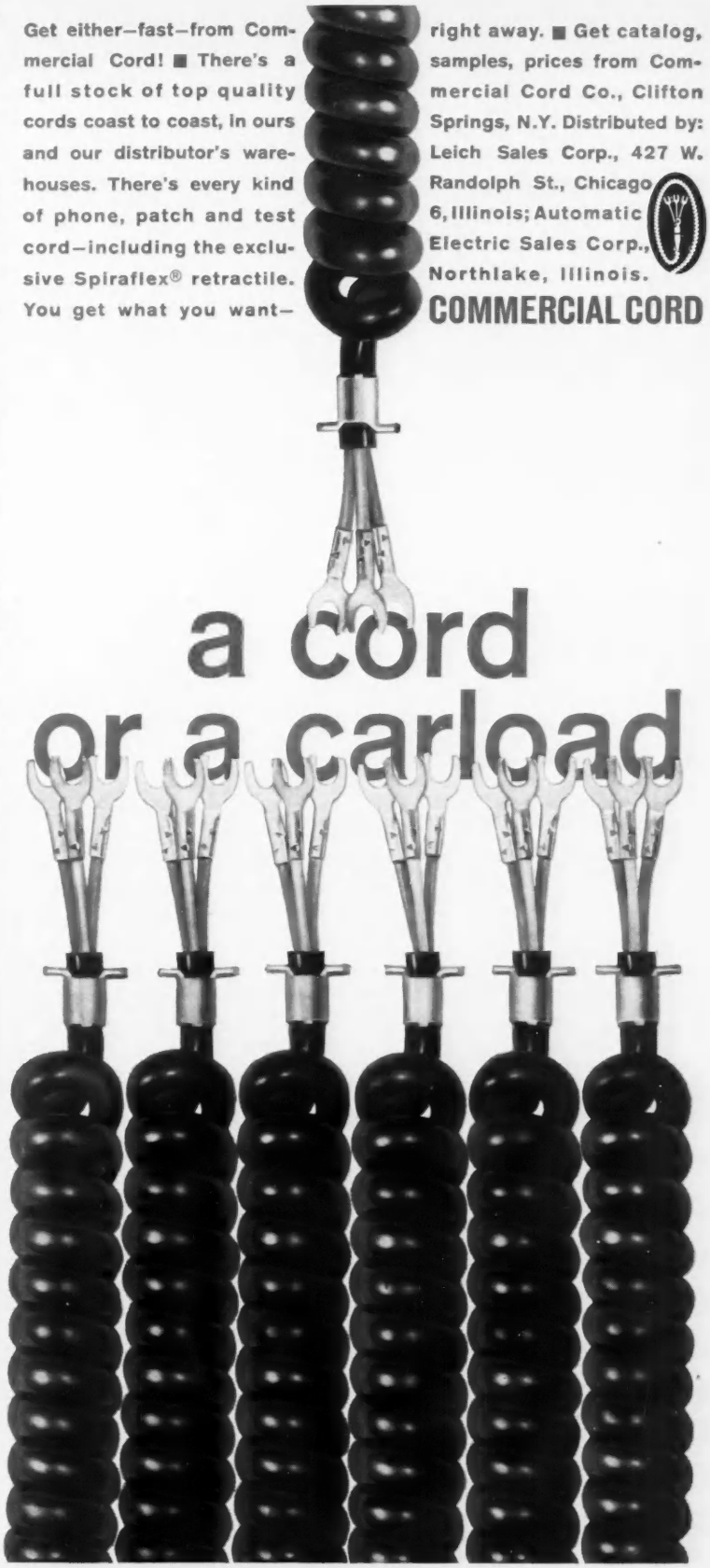

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Graybar Names Gale, Mgr. Utility Communications Sales

T. R. GALE has been appointed manager, utility communications sales of Graybar Electric Co., Inc., W. E. Henges, Graybar president recently announced. In this capacity, Gale will coordinate systems engineering and other requirements connected with the sales of complete microwave communications "packages" by Graybar.

The "package" concept of microwave sales is the result of recently-completed arrangements between Graybar and Lynch Communications Systems, Inc., whereby Graybar can supply the radio frequency equipment together with carrier multiplex terminals and repeaters. Similar agreements with other leading manufacturers add towers, antennas, power generating and tower lighting equipment as well as other related material and services to form the complete Graybar-supplied microwave system "packages."

Most recently, Gale has been assistant to Graybar's manager of Government and Communications Sales at Washington, D. C. Prior to that he was manager, Communications Sales at the company's Dallas, Tex., district office from February, 1955, through August, 1959. He originally joined Graybar at Richmond, Va., where he was in Telephone Sales.

An Electrical Engineering graduate from Georgia, Tech., Gale served as a Signal Officer in the Army during World War II, attaining the rank of Major.

Trans-Alaska Tel. To Provide Engrg. Services

IN A reversal of the usual process, an Alaskan-founded communications firm is expanding to serve the entire United States. Announcement of the move was made by John E. Field, president of Communications Engineering, Inc., who left Anchorage last month to establish South 48 headquarters in the San Francisco area.

Harley Rolfe, the firm's vice-president, is establishing an office in St. Louis, Mo. The eastern office in Allentown, Pa., will be managed by Ed McCullough, former project manager for RCA in Anchorage. William Swezey, director of engineering for the firm, is moving from Anchorage to St. Louis where he will serve in the same capacity.

Field said the unusual reversal in which Alaskan specialists are being exported to the South 48 results from national recognition given his staff for its work in utilizing radio to link telephone systems.

Trans-Alaska Telephone Co., of which Field is president, now serves 14 Alaskan communities from Kotzebue above the Arctic Circle to Seldovia on the Kenai Peninsula with modern phone systems.

Among high points in the Alaskan firm's brief history was its development of 4,380-foot Mount Susitna 36 miles west of Anchorage as a microwave and VHF relay center.

The roadless mountain-top site is maintained and re-supplied entirely by air. The first plane to land on the mountain was piloted by Field who delivered four cases of dynamite. A former Philco field engineer, Field has worked on communications in South and Central America, the Middle East, Africa and Europe.

In its new U. S. operation, Field's firm will specialize in communications engineering services for the nation's Independent telephone industry. The Anchorage-based firm is already working on contracts in McCall, Idaho and Scotts Bluff, Neb.

General Electric Co., has named Communications Engineering as a national manufacturer's representative to the Independent telephone industry for its new five-channel mobile telephone units.

L. M. Hester Joins Lynch Communication

LEE M. HESTER has joined the engineering staff at Lynch Communication Systems, Inc., San Francisco, Calif. In making the announcement, Donald Oestreicher, manager of engineers, said Hester will develop new circuits for advanced data communication systems.

Hester received his B. S. E. E. from the University of California at Berkeley. He is a member of the Institute of Radio Engineers and the American Institute of Electrical Engineers.

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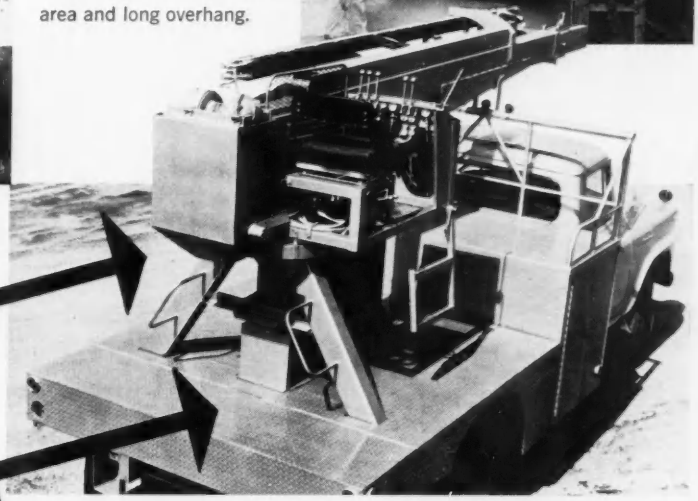

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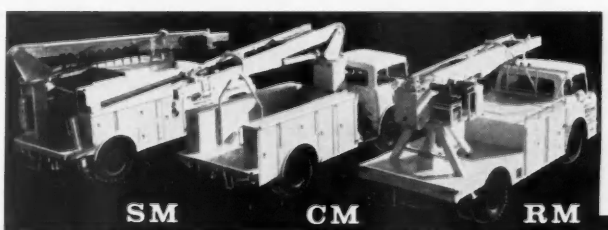

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STG-2-F—(#70-F type) 0-10 grams, 1 gram steps. $6.95 each.
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NEWS AND VIEWS OF INDEPENDENT TELEPHONY

VOLUME 10, NO. 2 Published by the Telecommunication Division of General Dynamics | Electronics MAY, 1961

Fred Fairly, Kansas City branch manager for Stromberg-Carlson telecom products, explains operation of XY Dial System in Menard's new office to County Judge and Mrs. John Winslow.

Magic moment. While Mayor David Sides throws the master switch (top), Tom Eaton, Southwestern Engineering Co., pulls protector strips (below). Shown with the mayor are A. J. Lacy, West Texas division mgr., and city councilman R. L. Connor. Assisting Mr. Eaton are D. B. French, central office repairman, Brownwood; Harold Wood, Menard exchange repairman, and Mrs. Wood.

Menard marks completion of first project by Four States Co.

During the process of converting Menard, Texas, to XY® Dial a petition was received from 97 subscribers in outlying areas requesting that this service be extended to them. Officials of the Four States Telephone Company knew that this would push back the cutover date. But they extended the service, and more than 800 subscribers (including a particularly happy 97) are now enjoying the convenience of a modern dial system.

Four States Tel is a subsidiary of Southwestern States Telephone Company, which is based in Brownwood, Texas. Like its parent company, Four States Tel is moving steadily toward 100% dial operation.

The cutover at Menard marked completion of the company's first project in cooperation with the Rural Electrification Administration. Several more projects are now in progress, and a larger number are in the planning stage.

Offices at Menard, London, and Tow, Texas, comprised the initial project. The entire Four States Tel program comes under the direction of Harry N. Hammond, chief engineer of Southwestern States Telephone Company.

Four States Tel was organized to develop and expand service in sparsely populated areas near the parent company's exchanges. The development and expansion are carried out with funds borrowed from the REA. Four States Telephone Company operates in Texas, Louisiana, Oklahoma and Arkansas, with the largest number of its offices in Texas.

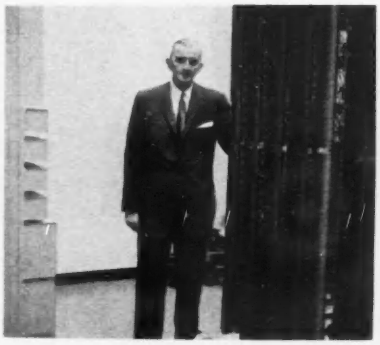
Photo above: Betty Penny, Cal Water & Tel, with PETITE phone. See page 93.

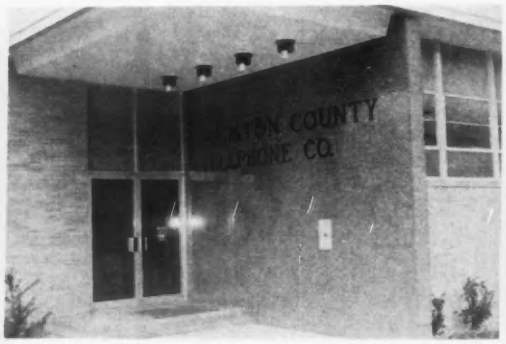
Conversion activity in high gear in Kansas City Branch territory

Charley Fogg, Fred Fairly, and Bill Riley of the Kansas City branch, planned their schedules to assist J. B. McDuff, general manager, and G. W. Stevens, plant superintendent, at Houston County Telephone Company open house.

Crockett operators expect normal increase in toll calls after conversion to keep them busy at new seven-position toll board.

Open house, cutover ceremonies mark





W. S. Bain, left, and J. B. McDuff, partners in the Houston County Telephone Company, are proud of the new telephone building at Crockett. The company serves approximately 3500 subscribers in East Texas. Crockett is the largest office, with nearly 2000 stations.

J. E. Thompson, asst. to the vice-president; Mrs. Thompson; W. G. Winters, president; and Seaborn Lipsey, asst. vice-president, all of Texas Tel & Tel, share the excitement of conversion at Normangee.

W. T. Connatser, Texas Tel & Tel plant superintendent, and Charley Fogg, sales representative for Stromberg-Carlson products, shown at earlier cutover in Leona.

"Pulling picks is much easier than swinging votes," stated Senator Neveille Colson. True, she had plenty of help from Texas Tel & Tel men and local government officials as she tried her hand at cutting over the Leona office. From the left, F. G. Winters, W. G. Winters, I. M. Oden, Fred Hall, B. F. Cummings and Senator Colson.

STROMBERG-CARLSON
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XY

service improvements by East Texas companies

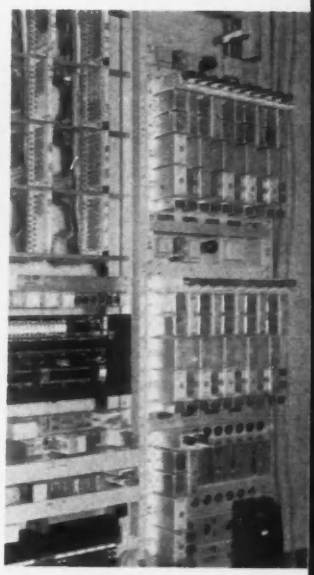
Conversions to XY Dial in the Kansas City branch area continue to rise as activity by Independents in this part of the country moves steadily ahead. Among the dozens of recent cutovers in this territory were those celebrated by two East Texas Telephone companies.

At Leona and Normangee, Texas Telephone & Telegraph's president, W. G. Winters, was host to visitors and government representatives as these offices began XY Dial service.

Also cut over to XY Dial at the same time as Normangee were Texas Tel & Tel offices at Iola, Bedias and North Zulch.

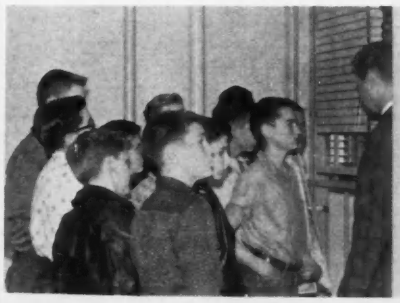
At about the same time, Houston County Telephone Company invited subscribers to visit its beautiful headquarters office in Crockett. The company operates five offices at Lovelady, Kennard, Austonio, Grapeland and Crockett. All are served by XY Dial.

F. G. Winters, vice-president, left, and W. G. Winters, president, escort Sen. Neveille Colson on tour of new XY Dial office at Leona, Texas.



This bank of Stromberg-Carlson 551 Hybrid Repeaters balances transmission levels on Crockett toll circuits.

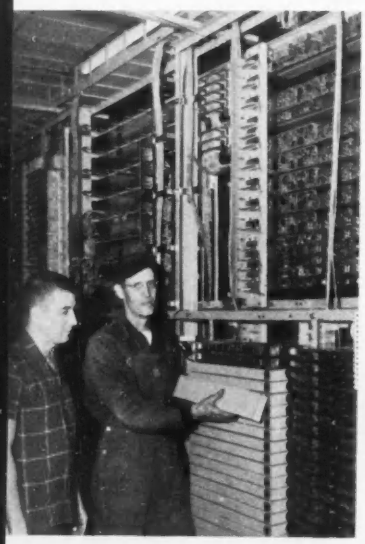
Future operators and central office men listen attentively as the work of the 1300-line XY Dial equipment is explained at Houston County Tel open house. More than 400 school children attended the two-day event held in Crockett, Texas.



At Milan, Mo., and Arcola, Ill.,

baseball, broom corn add variety to XY Dial cutovers

Telephone family gathers for cutover. The Holt family, satisfied users of XY Dial, was on hand to congratulate Bill Holt at the conversion of the Milan exchange. The Holts are well known for their telephone work in Oklahoma. From the left, Ross, John, Jack, John's wife, Bill, Carl. Seated are operators Wanda Holland and Ann Tinnius.



Nearly ready. L. R. Page, left, installation foreman for Stromberg-Carlson equipment, and Merle Moses, Illinois Consolidated Tel maintenance supervisor, look over XY Dial gear a few days before cutover.

Richard A. Lumpkin
President, Illinois Consolidated Telephone Company

Bill Holt, left, and his crew worked hard to provide modern XY Dial service for subscribers in Milan. With Bill are Bill Bushnell, Loren Couch, and Basil Young.

Large company or small, quality depends not on size, but on service. Subscribers in Arcola, Illinois, and Milan, Missouri, have good reason to know. One town is served by a large Independent, the other by a smaller one. Both enjoy the finest telephone service available.

Arcola is part of the large Illinois Consolidated Telephone Company, which serves 60,000 stations. Twelve hundred Arcola subscribers are benefiting from the XY Dial service. Arcola is recognized as the broom corn center of the world; 75% of all broom corn seed is sold through Arcola jobbers.

Richard A. Lumpkin, president of Illinois Consolidated Telephone Company, is well known in telephone circles. He serves on the board of directors of the United States Independent Telephone Association and is a member of the Illinois Telephone Association board. In addition, he has served his state as a director of the Illinois State Chamber of Commerce.

Bill Holt, manager of the Milan Telephone Company, recently climaxed months of effort when his office was converted to XY Dial. The company serves 1100 subscribers in north central Missouri, all from the Milan office.

Cal Hubbard, umpire-in-chief of the American League, placed the first call over the new system. He contacted Joe Cronin, president of the League, in Boston, Mass. Mr. Hubbard and his wife spend part of the off-season in their country home near Milan.

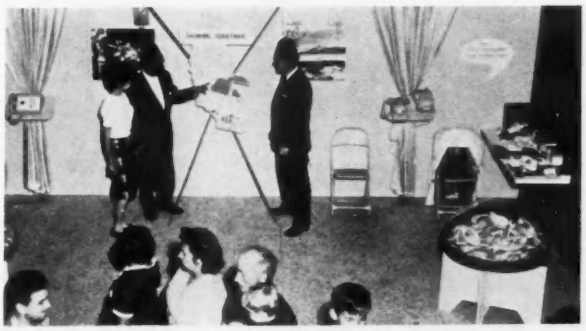
Going . . . going . . . gone! This was the Illinois Consolidated Tel. switchboard room at Arcola in final week before modern mechanical operators took over the job.

Cal Hubbard, American League umpire-in-chief, calls Boston as Bill Holt, left, manager of Milan Tel, and John Rogers, president of local bank, look on.

Advertisement

Promotions stimulate interest, sell telephone products, services

Date Festival Queens demonstrate the PETITE phone at Riverside County Fair for Coachella Valley Telephone Co., a subsidiary of California Water and Telephone Co. Below: a more complete view of the display. This is a good example of the effort that Independents in all parts of the country are putting forth to capture public attention, merchandise their products and services.



Keeping the public well informed is a vital part of the progressive telephone company's merchandising program. Today, with new products and services constantly entering the market, this task becomes even more important.

Making use of a good opportunity to capture the public's attention, the Coachella Valley Telephone Company recently placed an attractive display at the Riverside (Calif.) County Fair. Company representatives were on hand to answer subscribers' questions and to take orders.

Other Independents are following this promotional trend and exploring various means of getting their message across. County fairs, home and garden shows, and department store windows all offer the chance to impress subscribers.

Ashtabula (Ohio) Telephone Company helps local newspaper keep pace with the news

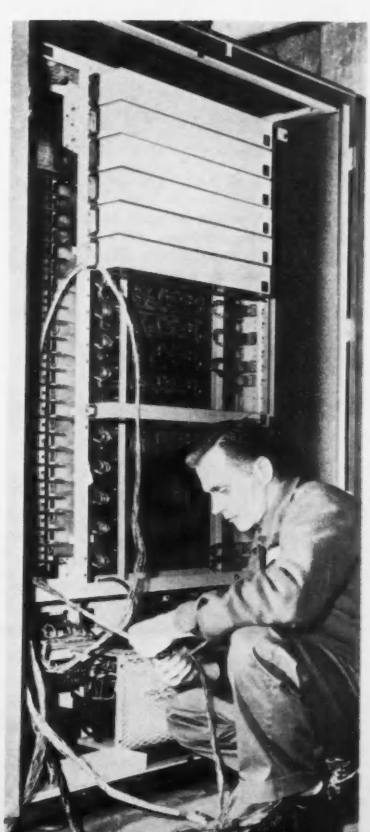
A daily newspaper feeds on accuracy and speed. Any daily omitting them from its diet soon develops a financial bellyache.

To keep pace with the speed of the news, dailies in every state have relied upon their telephone companies to supply the right equipment for the job to be done. A good example is the Ashtabula (Ohio) *Star-Beacon*, which now enjoys the convenience of a 40-line Stromberg-Carlson Dial PBX.

Installation of the attendant's turret and switching equipment was made by the Ashtabula Telephone Company. The company has been particularly successful in PBX placement. This is the fifth Stromberg-Carlson PBX now being used in Ashtabula.

Howard Wright is manager of the Ashtabula Telephone Company, which serves 16,300 subscribers in northeast Ohio.

John Kohut of Ashtabula Telephone Company installs switching equipment for Stromberg-Carlson Dial PBX at Star-Beacon. Left: PBX operator enjoys convenience of compact desk-model turret in newspaper lobby. The old manual switchboard, in use since 1947, stands by for retirement.



L. C. Turnley, right, president of Louisiana Telephone Association, chats with Marvin Hill by display of Stromberg-Carlson products.

State convention time— telephone people meet in Texas, Louisiana

State convention time brings friendly and familiar faces together to talk about their favorite topic — the telephone business. The large gatherings at the recent Louisiana and Texas meetings proved that these events are as exciting as ever. Most of the congratulations for the success of the conventions must go to the presidents of the Associations, Marion Clay in Texas and L. C. Turnley in Louisiana.

"Everything is ready to go, Jack." Marion Clay, pres. of Texas Telephone Association, works out final details of convention with Jack Haley, exec. secy. of the organization.

John Callender of Fort Bend Tel in Rosenberg, Texas, checks plans to handle growth in the Houston area with REA representative Ed McDonald, T. C. Thompson, general manager-commercial sales, and Bill Riley, sales engineer, for Stromberg-Carlson equipment.

Conventions are family affairs for W. L. Henning of Cameron Telephone Co., Sulphur, La. Here, his mother, wife and son watch the camera in hotel lobby.

"Back home again" for Carl Price, shown with two of his former customers, Mr. and Mrs. A. W. Peebles of Livingston (Texas) Telephone Co.

XY Dial installations maintain 1-a-day pace

In the months of February and March, installations of XY Dial equipment continued at a rate of one every working day. Independent operating companies in 20 states provided their subscribers with this modern dial service during those months.

Below is a partial listing of offices where XY Dial was installed in this period.

Alabama
Lisman

Arkansas
Fordyce
Hermitage
Wickes

California
Weaverville

Florida
Kissimmee

Illinois
Altona
Cisne
St. Peter

Indiana
Fortville
Union City
Urbana

Iowa
Mingo
Urbana

Kansas
Altoona
Benedict
Olpe

Minnesota
Turtle River

Missouri
Kingsville
Mound City

Missouri (cont.)
Windsor

Nebraska
Ragan

New Jersey
Frenchtown

New York
Au Sable Forks

North Dakota
Warwick

Oklahoma
Calera
Reydon
Salina

Pennsylvania
Everett
Littlestown

Texas
Mims
Pettus
Rhome

Virginia
Beaver Dam
Gum Tree

Washington
Kosmos
Packwood
Randle

Wisconsin
Wonewoc

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THE BACK OF THE BOOK

By JOHN G. REYNOLDS

Telephone Workers Lead

IN THE past two years the average telephone worker has led the way in "bringing home the bacon." His weekly "take home" pay, adjusted for price changes, in December, 1960 was 107.8 per cent of his take-home in December, 1958.

Next on the list is the federal government employe, with 106.6 per cent.

Gas and electric utility workers are fourth on the list with 104.0 per cent.

Manufacturing workers, despite their high rates of pay and pay raises, are worse off now than in 1958, in terms of take-home dollars. The three lowest are auto workers, 93.2 per cent; steel workers, 91.1 per cent; and soft coal miners, 87.1 per cent.

Business Opportunity

THE CANADIAN Bell Telephone Company, according to MacLean's magazine, loses about $100,000 a year in the provinces of Quebec and Ontario, thanks to slugs in coin boxes. The slugs that cause the headache are manufactured specially for coin-box cheats. The normal anti-fraud devices fail to deter them. They are put up in stacks, nickel, dime and quarter-size, like chicken feed from your bank, and sold to truckers and others.

We have not heard of a slug factory on this side of the border; this would appear to be an opportunity going begging. We must not fall behind the Canadians in so laudable an activity.

Rugged Individualism?

THIS yarn recently was aired in the *Congressional Record* where it was put after an appearance in one of the magazines published by the *Rotary Club*, and it was passed on to us by *Cross-Talk*.

"A young man lived with his parents in a public housing development. He attended public school, rode the free school bus, and participated in the free lunch program. He entered the Army, and upon discharge retained his national service insurance. He enrolled in the state university, working part time in the state capital to supplement his GI education check.

"Upon graduation, he married a public health nurse, bought a farm with an FHA loan, and obtained an RFC loan to go into business. His baby was born in the county hospital. He bought a ranch with the aid of the veteran's land program and obtained emergency feed from the government.

"Later he put part of his land in the soil bank and the payments soon paid out his farm and ranch. His father and mother lived very comfortably on the ranch on their social security and old-age assistance checks. REA lines supplied electricity. The government helped clear his land. The county agent showed him how to terrace it; then the government built him a fishpond and stocked it with fish. The government guaranteed him a sale for his farm products at highest prices.

"Books from the public library were delivered to his door. The government insured the money he banked. His children grew up, entered the public schools, ate free lunches, rode free school buses, played in public parks, swam in public pools, and joined the FFA. The man owned an automobile so he favored the federal highway program.

"He signed a petition seeking federal assistance in developing an industrial project to help the economy of his area. He was a leader in obtaining the new post office and federal building, and went to Washington with a group to ask the government to build a dam costing millions so that the area could get 'cheap electricity.' He petitioned the government to give the local air bases to the county. He also was a leader in the movement to get his specific type of farming special tax exemptions.

"Then one day he wrote his congressman: 'I wish to protest these excessive governmental expenditures and attendant high taxes. I believe in rugged individualism. I think people should stand on their own two feet without handouts. I am opposed to all socialistic trends and I demand a return to the principles of our Constitution and the policies of states' rights'."

"Fill 'Er Up With . . . ."

GASOLINE? Not necessarily. An OTS release suggests that it may not be gasoline much longer.

"Study Of Electrical Propulsion Of Ordnance Land Vehicles," by H. D. Carter, U. S. Army Ordnance Corps. (PB171 026, U. S. Dept. of Commerce, Washington, D. C. — $1) deals with the use of fuel cells as applied to army vehicles, with electric motors for each powered wheel. The report points out that before this can become a practical reality, much research and development will be required not only with regard to cells but also to increase the horsepower per pound weight of electric motors.

However, it will come, in civil as well as military use. Fuel cells point the way to something far better than internal combustion engines.

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Bill Chew...

Bill is one of our "Revenue Men" in Johnstown, N. Y.

A member of the Golden Directory Club for sales achievement, he is representative of the "Revenue Men" who help telephone companies increase their revenue from directory sales.

Bill started work with the General Telephone Directory Company as a sales representative in Herrin, Ill., in 1953. In 1957 he was promoted to sales supervisor and transferred to his current post in Johnstown, N. Y.

He and his wife and their three daughters and one son now live there, where Bill, a semipro baseball player for ten years, manages a home-town boys' baseball team. He is also on the Board of Deacons of his church, as well as being a Sunday School teacher.

Bill Chew is another example of the "Revenue Men" who work for the General Telephone Directory Company—who work for you, and who are an asset to any community in which they live.

You get more than extra sales when you put one of our "Revenue Men" to work on your directory.

His manners, his methods will be a positive credit to your company. He'll be welcomed by your advertisers.

He'll work together with you to produce a book you can be proud of. A directory with complete Yellow Pages service—showing the public where to go for all kinds of purchases, rentals and services. A directory with maximum accuracy, maximum revenue.

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